

MATERIAL HANDLING

FLOW



SEPTEMBER 1954

• HANDLING • AUTOMATION • PACKAGING AND SHIPPING

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**How to Select Bulk
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**What's Ahead for
Package Testing Techniques**

Flow Circulation

{ 35,827 FLOW BASIC
108,509 FLOW QUARTERLY

NOELLING

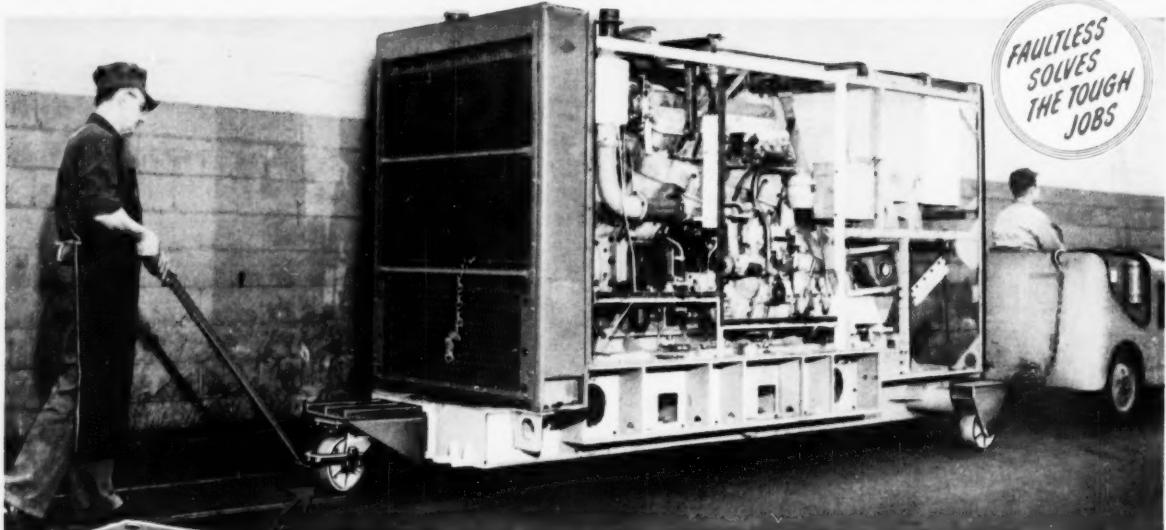
Faultless

CASTER
MATERIALS HANDLING
FACTS

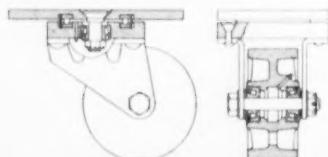
No. 6 in a series of

Caster Achievements for men in industry

MOVING 11 TON ENGINE AT CATERPILLAR TRACTOR CO., PEORIA



The FAULTLESS No. 1306-10 Extra Heavy Duty Caster like those used by Caterpillar Tractor Co., Peoria, Ill., on their heavily loaded transfer car.

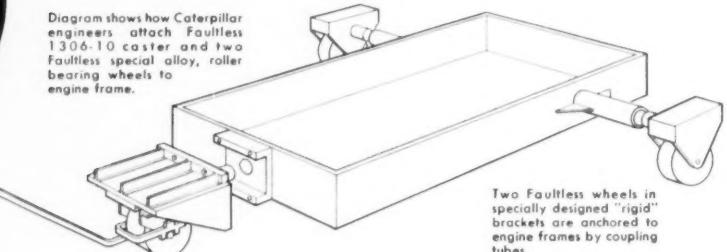


Maintaining a continuous production-line flow of 22,000 lb. Diesel-electric sets at the Peoria plant of Caterpillar Tractor Co. is accomplished with the aid of Faultless Dreadnaught Casters. Supported on one swivel plate caster, Faultless 1300 Series, and two Faultless wheels in special mountings, the engines are moved a total of approximately 100 feet past production

stations situated about 20 feet apart. A small industrial truck pulls the 22,000 pound assemblies through the production area. One man guides the individual units with an ingeniously designed steering arm arrangement on the swivel caster.

Another unusual materials handling achievement for men in industry, made possible by Faultless Casters.

Diagram shows how Caterpillar engineers attach Faultless 1306-10 caster and two Faultless special alloy, roller bearing wheels to engine frame.



Two Faultless wheels in specially designed "rigid" brackets are anchored to engine frames by coupling tubes.

Castered equipment from tote boxes to large trucks help you keep costs down in your plant. Whether you need to move 50 pounds of delicate instruments or 15 tons of sheet steel, Faultless makes the casters to best do the job.

Competent engineers, a modern factory, and skilled personnel combine to furnish you the dependable casters you need for your individual operation. Factory-trained representatives and selected distributors are on call to help solve your materials handling problems.

OFFICES IN ATLANTA, BOSTON, CHICAGO, CLEVELAND, DALLAS, DETROIT, GRAND RAPIDS, HIGH POINT, HOUSTON, INDIANAPOLIS, LOS ANGELES,
EVANSVILLE, MIAMI, NEW YORK, PHILADELPHIA, ST. LOUIS, SAN FRANCISCO, SEATTLE, TORONTO, WICHITA

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Goodyear Job-Fitted Industrial Tires **CUT TIRE COSTS!**

Tread Design Is Job-Fitted—the right tread design for your operation. Smooth and Grooved for easy rolling. All-Service or the famous All-Weather wherever traction is needed.

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Size Is Job-Fitted—the right size for every job. Over 100 different solid types and sizes plus a full line of pneumatic and semi-pneumatic tires make Goodyear Industrial Tires America's most complete line!

Learn how this right combination of size, tread design and compound can cut your industrial tire costs. Call your Goodyear Dealer for a free Industrial Tire Appraisal or write: Goodyear, Industrial Tire Sales, Akron 16, Ohio.

USE THE RIGHT TIRE FOR THE RIGHT JOB—USE

GOOD YEAR INDUSTRIAL TIRES

Easy rolling and greater cushioning make Goodyear's new XTRA CUSHION solid tire in the All-Service tread (above) a high favorite with truck operators and plant owners.

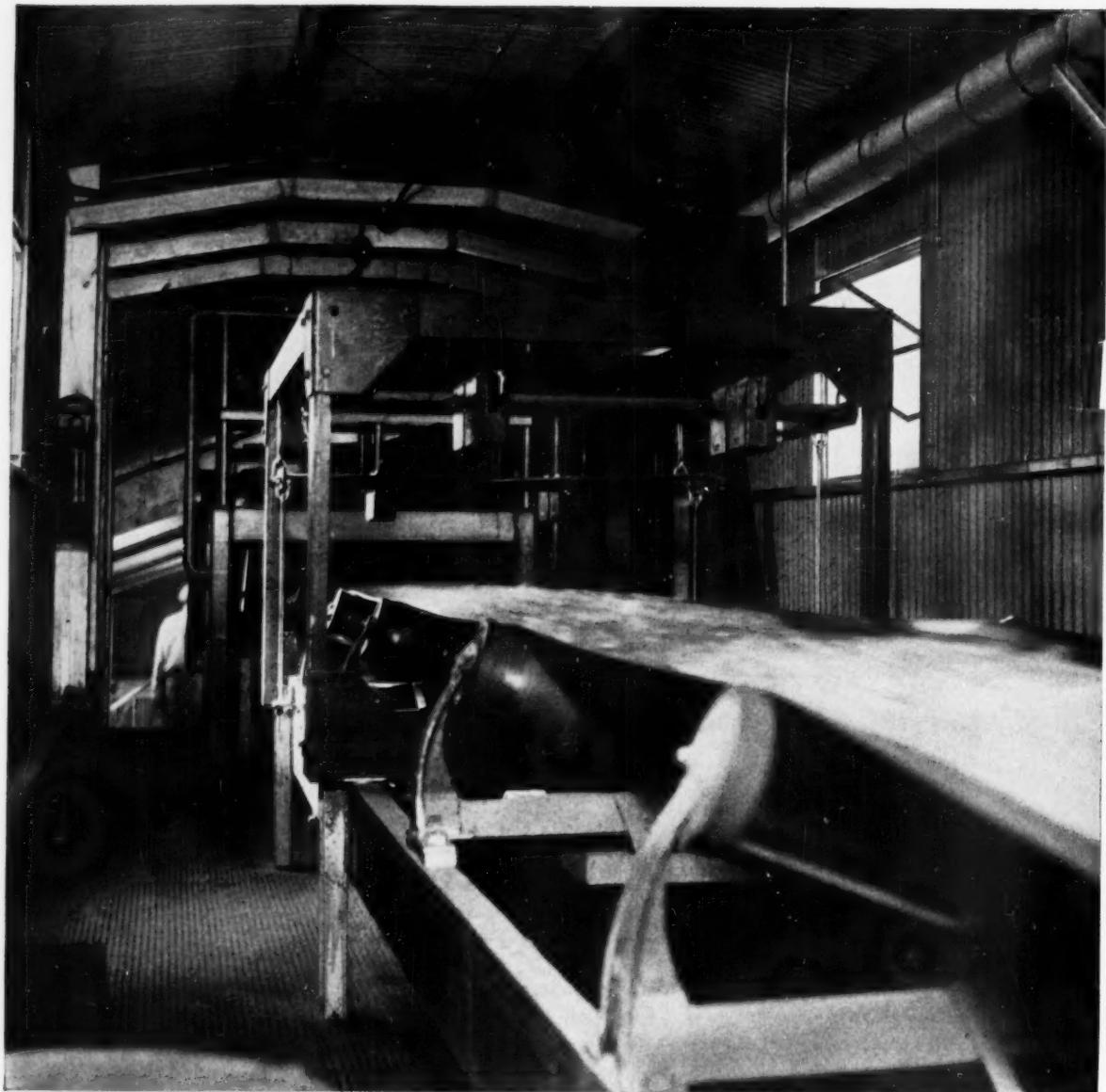


All-Service, All-Weather, Xtra Cushion—
T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

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Materials make no stops . . . no detours . . . when weighed on a Fairbanks-Morse Conveyor Scale. Faster? Of course . . . and weights are recorded automatically . . . without a weigh man . . . without a chance for human error.

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the Conveyor Scale is a rugged, dependable instrument . . . skillfully designed and precisely manufactured for enduring accuracy . . . years of trouble-free operation.

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a name worth remembering when you want the best

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NOW!

Automatic offers the widest selection of Type EE Underwriters' Labeled Industrial Trucks

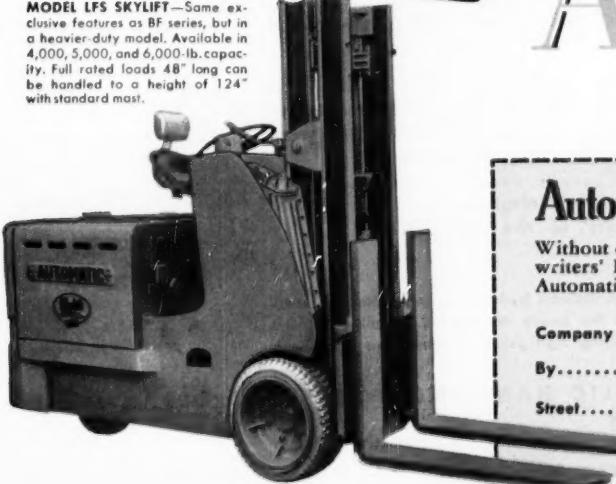
TRANSTACKER—Platform, also fork type for single and double face pallet models, available in a wide range of capacities. Fork TRANSTACKERS feature both single and telescopic lift.



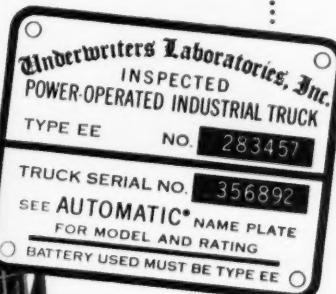
MODEL BF SKYLIFT—Sit-down type, with full automotive controls, the BF Skylift is available in 2,000, 3,000, and 4,000-lb. capacity. With collapsed height of 83", telescopic lift is 132" and single lift 68".



MODEL LFS SKYLIFT—Same exclusive features as BF series, but in a heavier-duty model. Available in 4,000, 5,000, and 6,000-lb. capacity. Full rated loads 48" long can be handled to a height of 124" with standard mast.



TRANSPORTER—Both platform and pallet models available, in 4,000-lb. and 6,000-lb. capacity. Either "push-button" electric lift or foot lift is available.



✓ Automatic recommends
these trucks for operation in
SEMI-HAZARDOUS locations*

✓ All give you cost-cutting
exclusive Automatic
features, too!

From compact, operator-led industrial trucks to 6,000-lb. capacity fork lifts, Automatic now offers the widest selection of Type EE Underwriters' Laboratories labeled trucks! This means that you can *play safe* with UL-labeled trucks for your semi-hazardous locations, yet at the same time choose a truck that is *keyed* to your particular materials handling job.

Select from famous Automatic Electric Transporters, Transtackers, Transtackers, and Skylifts equipped with Type EE spark-proof and dustproof protection. Skylifts include the Model BF in 2,000, 3,000, and 4,000-lbs. capacities, and the Model LFS in 4,000, 5,000, and 6,000-lbs. capacities.

Automatic has developed many exclusive, cost-cutting features in its various types of trucks—and you will, naturally, get many of these features for low-cost, trouble-free operation, *in addition* to the safety you need in semi-hazardous areas.

*Consult your local Fire Underwriter about operation in SEMI-HAZARDOUS areas.

For full details on these UL-labeled trucks, mail the coupon today!

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World's Largest Exclusive Builders
of Electric-Driven Industrial Trucks

Automatic

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Without obligation, I would like full information on the Underwriters' Laboratories labeled Type EE trucks manufactured by Automatic.

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By.....Title.....

Street.....

City.....Zone.....State.....

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You can beat this-



BIG JOE®

DrumToter

ANOTHER / N-
BETWEEN
HANDLING* TOOL



FAST, ECONOMICAL and VERSATILE HANDLING of DRUMS

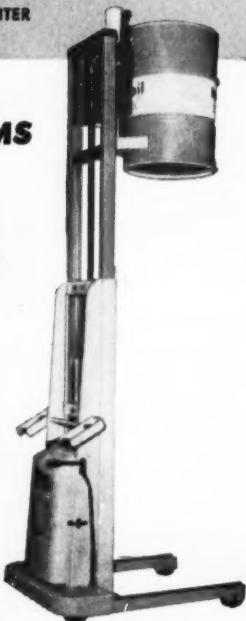
- PICKS UP AND RELEASES AUTOMATICALLY
- HANDLES ANY TYPE DRUM
- WORKS IN ANY LOCATION
- TIERS WITHOUT PALLETS

The "BIG JOE" line of more than 40 IBH* foot and battery operated fork lift trucks is now augmented by the new "DrumToter". This automatic drum handling attachment is easily and quickly installed and removed in a matter of minutes, even by an inexperienced operator. It handles drums of any diameter, regardless of rim size, for exact pick-up and placement wherever you want them.

This new unit further extends the utility of the "BIG JOE" line by making drum handling another fast and economical operation in custom-built "In-Between Handling" Systems for every department.

Write us for further information on the new "DrumToter" or any of the "BIG JOE" models for IBH*

*Short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high priced power-driven equipment.



TELESCOPIC
MODEL 110

"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

BIG JOE MANUFACTURING COMPANY

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MATERIAL **FLOW**

September, 1954
Vol. 9, No. 12

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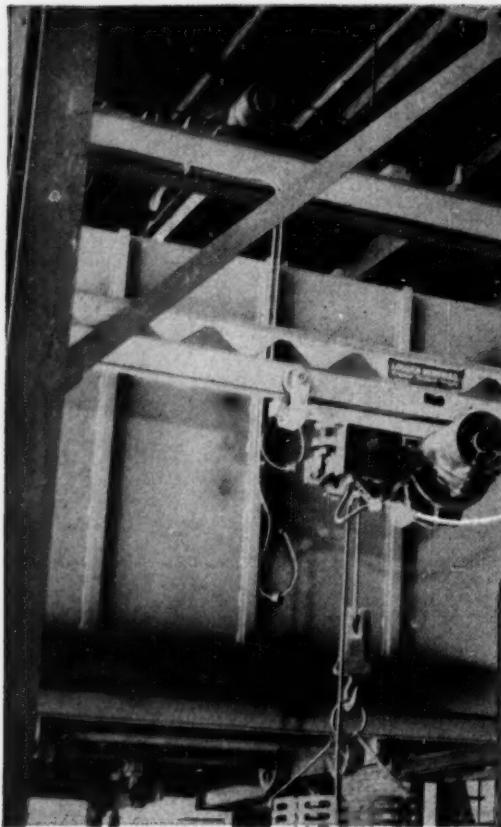
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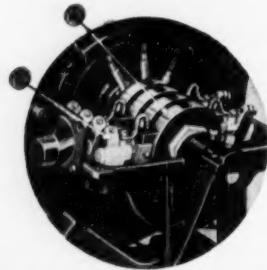
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TROUBLE-FREE SERVICE



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Malleable Iron Union Fittings



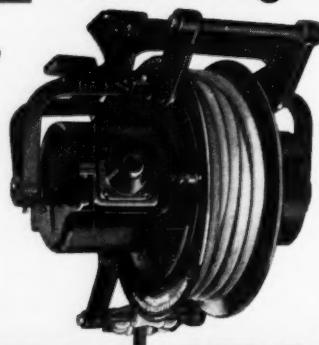
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Outlet Boxes

Lower Handling Costs

with



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TRADE MARK

Speeds Up Production with Safety—Pays Out and Retrieves Power Supply for Moving Machinery!
Wherever there is a need for feeding power to moving electric machinery, you can be sure there is an APPLETON REELITE of ample power and capacity to do the job!

Constant Duty REELITES perform a dual service . . . first they pay out cable to supply current to machines that move to and from a fixed current source . . . second, they retrieve slack cable, thus preventing hazardous conditions to men and machines.

One or more of the innumerable applications of APPLETON Constant Duty REELITES is sure to serve you profitably.

Why not write for complete details today?

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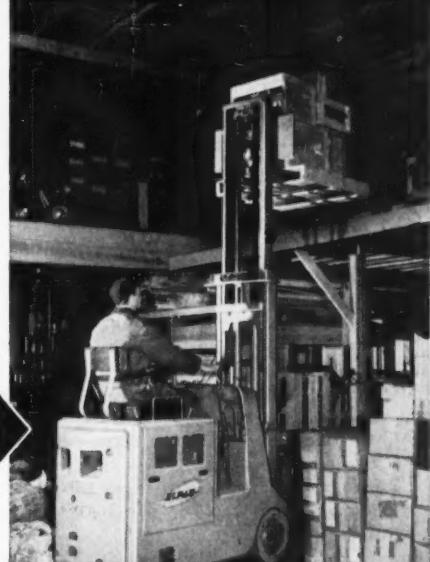
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4-way savings with ELPAR trucks



SAVES TIME

Grocery chain uses ELPAR fork truck to move 2,000 cases of food from boxcar to their warehouse. Job formerly took 20 man-hours. Truck now does it in 12—**60% Faster!**



SAVES SPACE

Wholesaler increased by 50% the effective capacity of his one-story warehouse with this ELPAR fork truck. Truck acts as "mobile elevator" to utilize space on balcony.



SAVES LABOR

In cold storage plant, four ELPAR trucks released 16 men for other duties! Also permitted roof-high storage, and safeguarded perishable foods by faster handling.



SAVES MONEY

Newspaper high-stacks its roll paper with ELPAR Clamp Truck, thus avoiding \$10,000 more storage costs! Truck repaid its cost in a few months.

FREE TO YOU...

48 YEARS' EXPERIENCE IN MATERIALS HANDLING

Besides data on above installations, here are folders offering you specific truck information based on Elwell-Parker's "know-how" gained since 1906. Check those of interest to you.



- General Catalog
- Specially-Engineered Trucks
- Preventive Truck Maintenance
- Case Histories on above jobs

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4239 St. Clair Ave., Cleveland 3, Ohio

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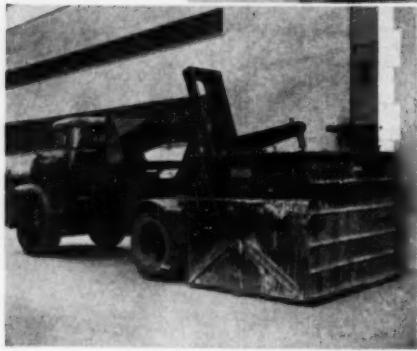
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You Can't Read This Ad Without Visualizing Tremendous Savings in Your Plant

If the handling of bulk materials is required in your plant, be they raw, finished, moist, liquid or rubbish materials, read these simple facts about the Dempster-Dumpster System. Then, visualize its application and tremendous savings possibilities in your own operation.

VISUALIZE HAVING ONLY ONE TRUCK with scores of bodies. One truck-mounted Dempster-Dumpster with only one man, the driver, serving many detachable Dempster-Dumpster Containers. These containers range from 2 to 21 cu. yds. capacity for use with recommended type Dempster-Dumpsters, and each container built to suit the materials to be handled—be they solids, liquids, dust, bulky, light or heavy. You place a container at convenient materials accumulation points, in or out of plant. As each is loaded, it is picked up, hauled and dumped, or the load is set down intact, and the entire operation is handled by hydraulic controls in cab by only one man, the driver.



The photographs above were made in the plant of one of the nation's leading brands of soaps and dentifrices. This installation comprises a single Dempster-Dumpster and 49 containers. Photos illustrate the simple one man pick up, hauling and dumping operation of a drop bottom container.



THE NATION'S LEADING FIRMS USE THIS SYSTEM BECAUSE OF ITS AMAZING EFFICIENCY AND TREMENDOUS SAVINGS.

YOU ELIMINATE trucks standing idle . . . eliminate re-handling of materials . . . eliminate loading crews. You increase efficiency, sanitation and good plant-keeping with this amazing Dempster-Dumpster System—the lowest cost method of bulk materials handling ever devised. Write us now for complete information. Manufactured and sold exclusively by Dempster Brothers, Inc.



DEMPSTER BROTHERS, 694 Shea Bldg., Knoxville 17, Tennessee



Announces the purchase of the facilities of
SERVICE CASTER & TRUCK CORP.
of Albion, Michigan

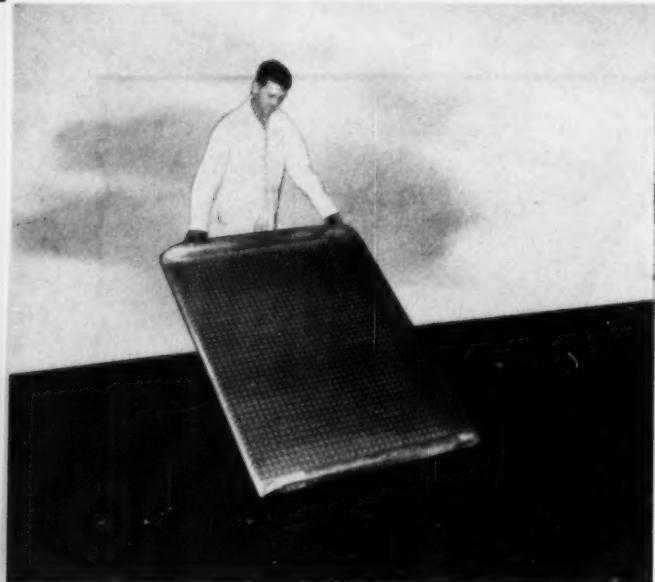
THIS expansion of our facilities provides COLSON with the most comprehensive line of materials-handling equipment in the country. We are proud to be able to offer old customers of both companies in particular, and American Industry in general, a wider selection of materials-handling products and a broader engineering service than ever before possible.



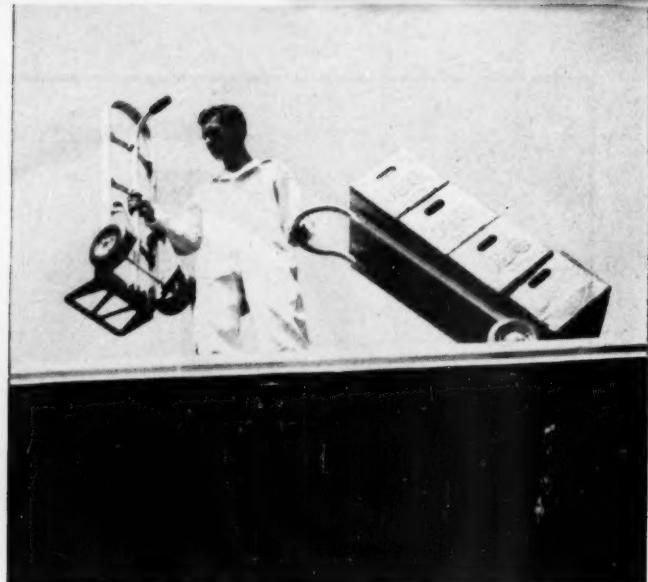
THE COLSON CORPORATION
ELYRIA, OHIO

COLSON CORPORATION
MANUFACTURERS OF MATERIALS-HANDLING EQUIPMENT
AND POWER LIFT EQUIPMENT

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Dockboards



Hand Trucks

Whenever "light weight" is important



Dockboards



Ramp-Dockboards



Industrial Trucks



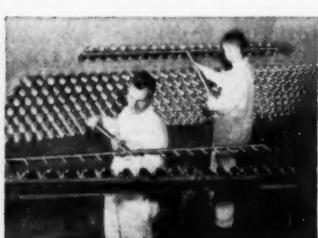
Pallet Dollies



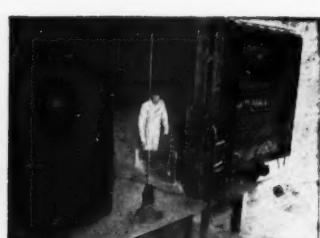
Tote Boxes



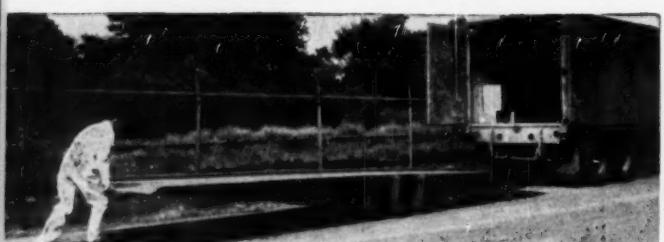
Barrel Skids



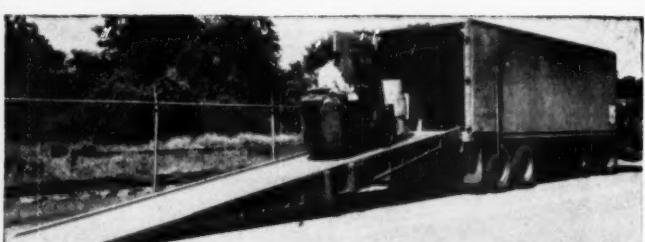
Can Forks



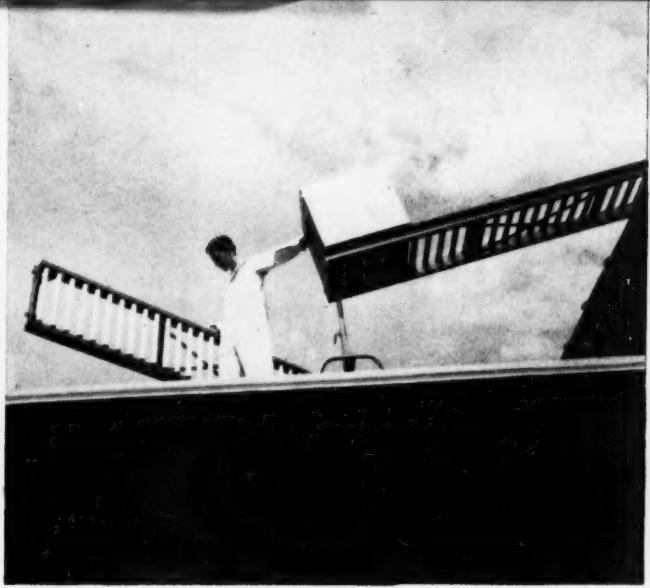
Grain Shovels



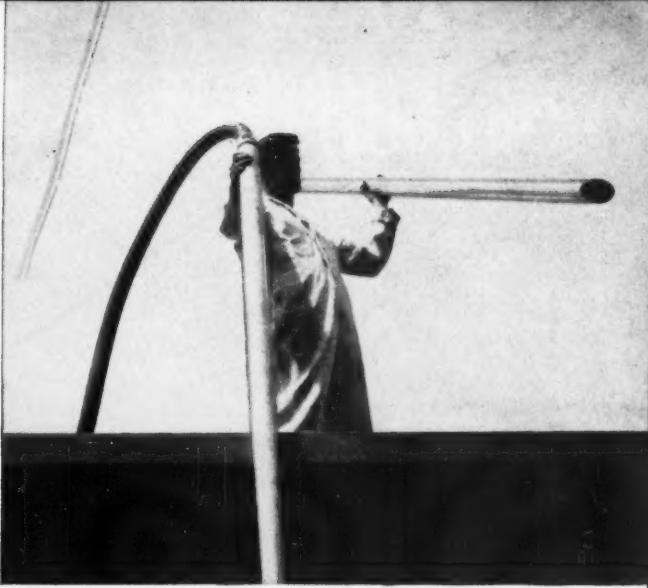
Yard Ramp positioning



Yard Ramp in action



Roller Conveyors



Carloading Tubes

— make it Magcoa

Take advantage of Magcoa light-weight, heavy-duty construction to move materials faster, more economically. Mass produced, with resulting lower initial cost, Magcoa equipment does the job you want it to do—usually more. For the lightest way to move materials safely, easily—make it Magcoa materials handling equipment.

DOCKBOARDS—For faster freight car and truck loading with greater safety. Every Magcoa Dockboard is fitted to your specific handling requirements as to size, capacity, dock-to-carrier span, and equipment underclearance. Quarter round safety curbs; one-piece hand holds for easy lifting, positioning, rugged safety spans; rounded curb ends—features that make the Magcoa Dockboard industry's safest, most economical buy.

RAMP-DOCKBOARDS—Magcoa Ramp-Dockboard Combinations are specially designed for fast, safe loading of trucks and rail cars which are much higher than your dock. For small differences of height the Dockboard is used alone. Constructed entirely of light-weight, heavy-duty magnesium, the Ramp and the Dockboard can each be lifted and positioned by one man.

YARD RAMPS—Speed carloading from ground level. One man moves it, hydraulic lift positions it—and material starts to move, fast. Where limited dock space or track congestion is a problem, the Magcoa portable Yard Ramp is the answer. Braced like a bridge; five basic sizes—with capacities to 16,000 lbs.

TWO-WHEEL HAND TRUCKS—Light-weight magnesium construction in the new, completely redesigned line of Magcoa hand trucks—more than 60 models. Designed for mass-production manufacture and maximum interchangeability of parts, with resulting price reductions. All bolted construction—pliers and screw driver are the only tools you need. You get a wide selection of accessories, plus your choice of curved-back or straight-back frames, choice of handle styles and nose plate sizes, and choice of wheel sizes and tire types, too! Capacity: 500 lbs.

FOUR-WHEEL INDUSTRIAL TRUCKS—Magcoa/Tobey light-weight aluminum trucks move loads easily, safely. Torsionally flexible construction keeps all wheels on the ground at all times; saves tires, casters. Exclusive Magcoa/Tobey guaranteed casters cannot bind; don't shimmy, don't wear out. Truck weight cut through use of high strength aluminum alloy extrusions. Every ounce of metal carries its share of the load. All sizes, styles and capacities...with removable sides, other accessories...for manual pushing, or towing by powered equipment.

ROLLER CONVEYORS—Portable, functional, and the best solution where speed and ease of conveyor relocation is a factor. 100 feet of the Magcoa Gravity Roller Conveyor can be set up by one man in less than 2 minutes! Shippers, truckers, and receivers use Magcoa conveyor sections to move cartons, boxes,

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BARREL SKIDS—Capacity, 1000 lbs.—yet a Magcoa Barrel Skid weighs a mere 25 lbs.! Rugged magnesium construction in wide range of sizes for every drum-and-barrel-handling job.

GRAIN SHOVELS—Weigh less than 20 lbs. Easy to handle; reduce worker fatigue. Spark-resistant, with quickly and easily replaceable striker plates.

CAN FORKS—An eleven-tine fork weighs as little as 1½ lbs.! Reduce worker fatigue, cut maintenance costs with versatile, magnesium can forks. Simple screw-in tines make replacement easy.

A suggestion: whenever "light weight" is important—make it Magcoa.

MAGNESEIUM COMPANY OF AMERICA MATERIALS HANDLING DIV. EAST CHICAGO I., INDIANA

DIVISION OFFICES:

New York 20 • Philadelphia 18 • Washington, D. C. •
Houston 17 • El Segundo (L.A.), Calif. • San Francisco 4
Representatives in principal cities

For further information, clip this coupon to your business letterhead...check the product or products you are interested in...print your name and title clearly...and mail today to Magnesium Company of America, Materials Handling Div., East Chicago I., Indiana.

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| <input type="checkbox"/> Ramp-Dockboards | <input type="checkbox"/> Conveyors | <input type="checkbox"/> Barrel Skids |
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| <input type="checkbox"/> Hand Trucks | <input type="checkbox"/> Tote Boxes | <input type="checkbox"/> Can Forks |

Veeder-Root Hand Tally counts anything you see. Press thumb lever once for each count. Reset to zero with one turn of knob. \$8.30 ea. (Write for quantity prices.) Immediate delivery.

If this Clicks
often enough...
then the show
clicks, too!



Added Evidence
that—

**Everyone Can Count on
VEEDER-ROOT**

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This is another one of the hundreds of uses for

each of the hundreds of Veeder-Root Counters which are made for manual, mechanical and electrical operation. Chances are that you, too, can count on Veeder-Root . . . with counters built into your products as standard parts, or attached to your production equipment. We'll help you to figure out how. Write:

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HARTFORD 2, CONNECTICUT



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Montreal 2, Canada • Dundee, Scotland
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FLOW • SEPTEMBER, 1954

adjustable UNISTRUT® racks

meet changing stock demands!



Shelving on the rack at left is adjustable up or down with this UNISTRUT Uni-Clip support. Uni-Clip snaps into slot of UNISTRUT channel and locks in place without tools. Teeth provide positive, non-slip support for shelves. Shelves may be added or removed in minutes.

Save time, money... adapt to different needs... use over and over without loss

Racks that readily adjust to changing stock demands can reduce storage and handling costs to a minimum. That's why so many industries are solving racking needs with adjustable UNISTRUT framing. For this simple framing system is altered or changed as easily as it is erected—without welding, drilling, special tools or skilled labor.

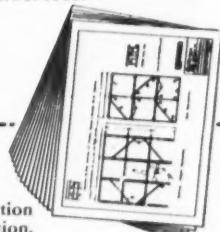
UNISTRUT framing has great load-carrying capacity. It is easy to work with, yet can be used time and again without waste or additional investment. No matter how unusual your racking needs, your UNISTRUT Distributor will be glad to show you how adjustable UNISTRUT framing can be used for low-cost, space-saving racks of all designs. See him, or mail the coupon for the 15 free basic UNISTRUT rack designs.



Photos illustrate UNISTRUT racks used by Maremont Automotive Company, parts manufacturers of Harvey, Illinois. Uni-Clip rack at top of page has adjustable shelves to accommodate demand changes. Rack storing tailpipes demonstrates adaptability of UNISTRUT to various designs. Both may be dismantled and reassembled without loss.



U.S. Patent Numbers
2327587 2329815 2345650
2363382 2380379 2405631
2541908 Other Patents Pending



Please send me complete information including catalogs, without obligation.

UNISTRUT PRODUCTS COMPANY
1013 W. Washington Blvd.
Chicago 7, Illinois Dept. A-9

Name _____

Company _____

Address _____

City _____

Zone _____ State _____

CUT AND BOLT TOGETHER

Use a hacksaw and wrench!
No drilling, no welding!
100% adjustable and reusable!

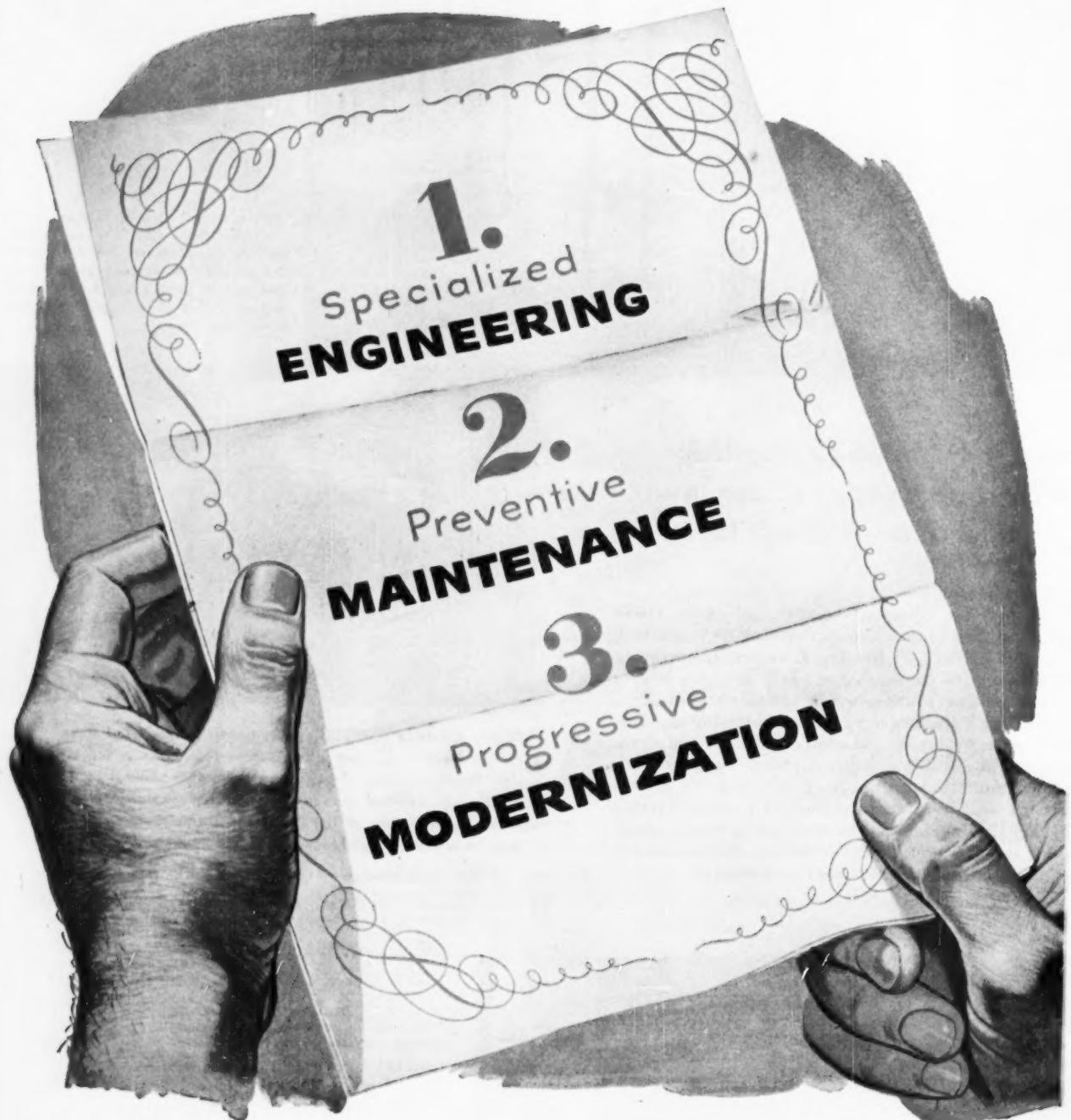
Distributors and Warehouse Stocks in Principal Cities. In Canada, Northern Electric Company. Consult your telephone directories.

The World's Most Flexible All-Purpose Metal Framing
See our complete catalog in Sunbelt's Architectural,
Plant Engineering and Industrial Construction Show.
Circle 155 on Reader Service Card



Always-On-Duty

OTIS GENERAL DUTY FREIGHT ELEVATORS

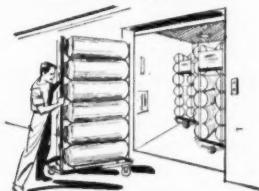


"INSURANCE"

HAVE THREE EXTRA FACTORS OF SAFETY

Whenever you need a freight elevator, it should be on duty. It's like a watch. If it isn't running it's useless. And costly. Especially when lack of elevator service holds up a production or materials handling line, or warehouse delivery trucks, or automobile parking, or mining, etc.

You can save money in the long run with Otis general duty freight elevators. They're standardized. They have lifting capacities of 2,500 up to 10,000 lbs. or more. And full safety features, power doors, self-service or attendant operation.



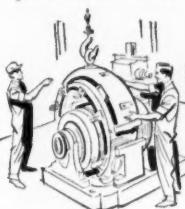
Only Otis freight elevators can offer you always-on-duty "insurance." It's based upon these 3 extra factors of safety.

1 Specialized ENGINEERING

Otis hoisting machines, which are the heart of the installation, are not adaptations of standard commercial equipment. Like every other part of

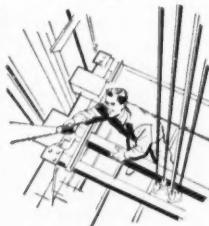
an Otis installation, they're specifically designed to meet the unique requirements of elevator service. And

every part is built in Otis plants under rigid quality control. All with a basic knowledge of elevatoring that can't be matched.



2 Preventive MAINTENANCE

Otis maintenance keeps Otis freight elevators performing like new—year after year! Otis service is *engineered-service by the maker* that prevents slowdowns and breakdowns; extends elevator life by 50%; eliminates expensive, unexpected repair bills; keeps replacement parts available over 60 years; supplies field-trained men having an aggregate of 21,500 years' elevator experience; provides 24-hour-a-day service on a nationwide basis through 268 offices. All, because we never lose interest in the performance of an Otis installation.



3 Progressive MODERNIZATION

An Otis freight elevator need never become obsolete. New developments are made applicable to existing installations. We strongly recommend planned, progressive modernization as always-on-duty "insurance."

AUTOMATION

You can have freight elevators where you want them, when you want them. The same advanced electronic skill that developed *AUTOTRONIC®* completely automatic operatorless elevators for busy office buildings is ready to make completely automatic freight elevators an integral part of your production line.

* * *

Our broad experience in the field of industrial elevating qualifies us to advise on standard or special adaptations of Otis elevators for unusual freight handling requirements. This experience is available for any size installation, however large—or small. Call any of our 268 offices for details.

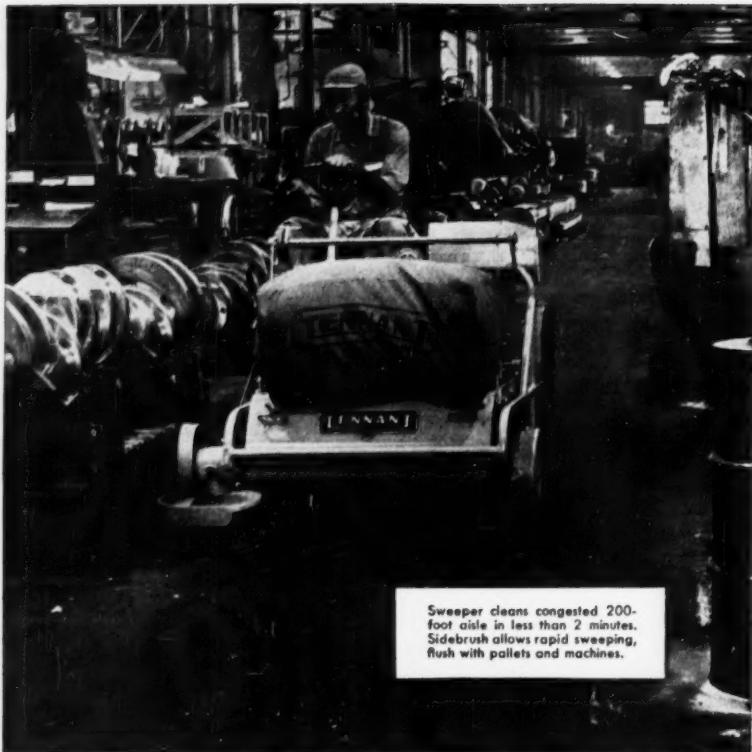
Otis Elevator Company
260 11th Ave., New York 1, N. Y.



FREIGHT ELEVATORS

HEAVY DUTY • GENERAL DUTY • LIGHT DUTY

Circle No. 191 on Reader Service Card for more information



This TENNANT Power Sweeper

DOES A 2 Hour SWEEPING JOB IN 10 Minutes!

By the time one man with a pushbroom sweeps halfway down one of the 200-foot aisles shown above, the TENNANT Power Sweeper has finished sweeping 6 aisles just like it.

So in just 10 minutes it can sweep an area that would often take 2 hours to do by hand.

It sweeps a 48" path far cleaner than pushbrooms—and right up to pallets and machines. Revolving brush provides 17 strokes per foot of travel, and combines with powerful vacuum system to do an extra-clean job—even draws dust from many cracks.

Often Pays for Itself in Several Weeks

In the plant shown here, one man, with the TENNANT Sweeper sweeps to the end of an aisle and back in less than 2 minutes. The machine covers a 48" path, picks up dust and litter "on the run," does a U-turn in about 3 seconds. You can reverse it instantly, turn in a 5-foot radius . . . dump its loaded dirt hopper in 30 seconds. Performance like this—round-the-clock when necessary—makes it easy for this sweeper to pay for itself in 1 to 6 months in most plants. Write today for full information.



G. H. TENNANT CO.
2576 N. 2nd Street
Minneapolis 11, Minn.

POWER SWEEPERS

INDUSTRIAL MAINTENANCE EQUIPMENT
Circle No. 147 on Reader Service Card for more information



Engineer Likes Procedure Manual

To FLOW:

With respect to the articles by W. B. McClellan and Robert C. Brady which you have been publishing in installments in FLOW, possibly you will be interested in knowing I have had these articles called to my attention by various users throughout the state.

I personally feel that this is one of the finest works ever presented in your magazine, and would appreciate it very much if you could let me have ten or twelve copies of the complete series for my personal file.

M. E. Szyller
The A. J. Gates Company

It's always nice to be complimented on one's efforts, but the appreciation is oftentimes greater when it comes from a fellow-engineer, as the above.

Pumping Acids

To FLOW:

You had a very interesting article in the June issue of your magazine entitled, "Pump Handling Systems".

I am interested in more details on pumps to be used for hydrochloric acid (cold) and sodium hypochlorite, both of which were listed as requiring materials "MA HB".

If you will be good enough to advise what pump companies make these pumps and if the same pump can be used interchangeably with both items, I will be more than grateful.

Carl F. Wittichen, Jr.
President
Wittichen Chemical Company

As explained in the article referred to, there are hundreds of

Free **Rapistan** field reports on

Profit Saving Methods



Here is a wealth of information you will find in no other place. From every part of the country, from every line of business, we have collected valuable information on how successful companies have solved their materials handling problems. Each report gives you the problem, lists the equipment, shows photos of the installation and describes the results. Any of these reports or the many others in our files, are yours for the asking.

Just check the ones you want . . . tear out this page, and mail it with your name and address to Rapistan at the address below.

APPAREL COMPANY

Handling reduced 75%, rush orders move quickly, marking and pricing more efficient. F.R. 50

APPLIANCES

Hand trucking cut 80%, congestion relieved, marring and scratching stopped, order processing speeded. F.R. 13

AUTOMOTIVE PARTS COMPANY

Slashes time unloading 600 lb. motors by 66%. Over 3 years of operation without a single mechanical failure. F.R. 33

BAKERY

One man replaces 6-man crew loading trucks. Bread handled only once, package remains uncrumpled. F.R. 55

BEVERAGE DISTRIBUTOR

Increases loading and unloading efficiency. Improves warehousing and bottling operation. Speeds-up delivery. F.R. 51

BOOKS AND MAGAZINES

New construction made unnecessary by Rapistan system which utilizes previously unused space. F.R. 28

BOTTLING COMPANY

Rapistan system handles increased production, pays for itself in first season. F.R. 10

BUILDING SUPPLIES

How to take the heavy work out of stacking, handling, carrying, bulky, hard-to-handle building goods. F.R. 44

COSMETICS

Now handled with $\frac{1}{3}$ time and labor previously required. Checking and packing simplified. Stock-room space increased. F.R. 35

DRUG SUNDRIES

Warehouse efficiency increased 50%. Order-picking efficiency increased 60%. Overtime eliminated. F.R. 49

FARM PRODUCE

Kept moving smoothly — even at season's peak. Output increased 25%. \$20 per week saved on labor costs. F.R. 3

FLOOR COVERINGS

Flexible system efficiently handles 700-lb. rolls of carpeting or heavy cartons of tile. Reduces fatigue, speeds delivery. F.R. 5A

FOOD PROCESSOR

Saves time and increases production with smooth flow of bulky, heavy cartons. F.R. 18

FURNITURE COMPANY

Saves 25% in labor, 40% in clean-up cost. Workmanship improved. Work-in-process reduced 35%. Damage eliminated. F.R. 14

HARDWARE WAREHOUSING

System handles 400-lb. bathtubs, plumbing fixtures and nail kegs easily. Cuts unloading time as much as 75%. F.R. 38

LAUNDRY

Increases delivery efficiency 20%. Extra space now available through elimination of congestion. Housekeeping 50% easier. F.R. 4

MEAT PACKER

Cuts operating and truck loading cost 50%. Rapistan system eliminates spoilage, speeds delivery. F.R. 17

NEWSPAPERS

Circulation department handles 100% increase in press production, yet meets delivery schedules with same crew. F.R. 40A

PAINT PRODUCTS

Heavy 5- and 10-gallon chimed cans quickly moved in AND out of remote 2nd floor storage. F.R. 5

POULTRY PRODUCTS

Breakage and damage to egg cases and contents is eliminated. Fast handling cuts truck turn-around time. F.R. 48

PRESS ROOM

Stampings automatically delivered to tote boxes adding $\frac{1}{2}$ hour daily to press production time. F.R. 37

PUBLIC WORKS

2 men with Rapistan remove bagged chemical from storage, slit bag, fill 5-yd. truck in 5 minutes. F.R. 54

RETAIL GROCER

Saves \$2,000 a year. Utilizes basement space. Gains efficiency in checking and pricing. F.R. 25

STAMPINGS

System speeds up production 25%, eliminates 400 shop trucks and lightens work of operators. F.R. 7

SUPERMARKET

Fast, convenient carry-out service saves \$225 a week — attracts customers. Reduces parking lot congestion. F.R. 20A

TIRES

Rapistan system cuts unloading time in half for wholesaler who previously used elevator and trucks. F.R. 18A

TOBACCO AND CANDY

Man-hours reduced 75% for unloading and storage. System permits greater volume at lower cost. F.R. 26

TOOLS

Small parts orders speeded up 25%. Faster delivery service improves customer relations. F.R. 11

WASTE MATERIALS

Unloading time cut 50%. Loading crew reduced $\frac{1}{3}$. F.R. 20

WHOLESALE GROCER

Cuts operating cost \$600 per month. Reduces unloading time 50%, shipping time 30%. Handles 25% more goods. F.R. 1A

WHOLESALE PRODUCE

Four man crew loads twice as many trailers per shift after installation of Rapistan system. F.R. 52

The RAPIDS-STANDARD COMPANY, Inc.
170 Rapistan Bldg., Grand Rapids 2, Mich.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Rapistan BETTER CONVEYING EQUIPMENT
CONVEYORS, gravity and power belt • INDUSTRIAL CASTERS • WHEEL-EZY TRUCKS

At United States Plywood Corp.—



Rapid order filling in U.S. Plywood's Philadelphia, Pa. warehouse is helped by modern materials handling methods.

C & D Batteries for EXTRA work

United States Plywood Corporation, the world's largest plywood organization, manufactures a wide variety of plywoods and related products. To help handle the millions of pounds of material moving through its 73 warehouses from coast to coast, U.S. Plywood uses C&D Slyver-Clad* batteries as a major source of power for many of the industrial trucks in daily operation. For U.S. Plywood, like hundreds of other important American companies, has found it pays to power with C&D Slyver-Clad batteries.

C&D Slyver-Clad batteries are approved as standard equipment by all electric truck manufacturers. For further information, write for catalogs.

*T.M. Reg.



BATTERIES, INC.
of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST
Circle No. 33 on Reader Service Card for more information

LETTERS

Continued

materials which may be pumped. The above letter has been passed along to pump authorities, for a final answer.

Drum Problem

To FLOW:

We are interested in finding a source for a fiber drum handling device. This device should be capable of lifting and tilting fiber drums at work place height. This drum will also be used as a hopper. It is also desired that the device be relatively inexpensive, since it will be permanently located at the work station.

A fork lift truck with a drum handling attachment is not adaptable. A barrel lifting stand is not adaptable either, since it is not high enough.

Do you know of any standard piece of equipment that may answer our purpose?

Robert Weis
Production Manager
Slater Electric & Mfg. Co. Inc.

Complete literature and prices have been requested from the manufacturer of the drum dumper for Reader Weis. The unit answers, to all practical purposes, the description as set forth.

Intangible Gains

To FLOW:

Last year you had an article in your magazine pertaining to a steel window manufacturing warehouse. The article described automation of in-and-out storage of steel windows through a system of over-hanging conveyors.

I am interested in obtaining a copy of that article and wondered if you could send me the issue in which it was contained.

John Katsis
Industrial Engineering Dept.
Ceco Steel Products Corporation

The article on steel window storage was entitled, "Intangible Gains . . . They're Important", and appeared in November, 1953.

FOR MODERN MATERIALS HANDLING—

ROEBLING SLINGS!

They are economical, flexible and doubly safe. They are the easiest slings to order because they are as strong as the catalog strength of the Blue Center wire rope from which they are made. Establish your own safety factor and order the rope diameter you need.

In addition, these Slings are remarkably easy to handle. There are no servings...no thickened sections of rope next to the loop...wire ends are permanently covered by the tapered sleeve. They come to you ready for work...and they cost less than most other slings.

Write for folder on Roebling All-Purpose Slings...and adopt these slings for new efficiency and economy. John A. Roebling's Sons Corporation, Trenton 2, New Jersey.



ROEBLING

[F]

Subsidiary of The Colorado Fuel and Iron Corporation

Today's top choice for the big majority of lifting jobs. Roebling All-Purpose Slings are stocked in standard sizes and lengths for immediate delivery.



If desired, Roebling can supply a tapered sleeve attachment with a heavy steel galvanized thimble plus attached fittings as shown below.



Drop Forged Steel
Weldless Hook



Weldless Link

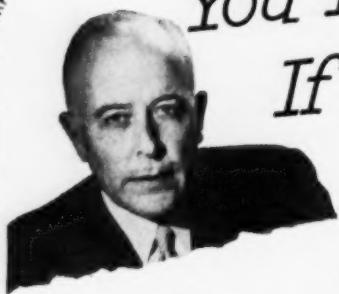


Drop Forged
Weldless Shackle

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESEA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

Circle No. 136 on Reader Service Card for more information

BROADWAY DEPT. STORE • MAY COMPANY • W & J SLOANE • JAEGER & BRANCH • ROSENFIELD COMPANY • ABRAHAM & STRAUS • MACY'S • THE EMAZORIUM • MOHAWK CARPET MILLS • JOHN BREUNER COMPANY • C. H. MASLAND & SONS • RENARD LINOLEUM & RUG CO. • L. BAMBERGER COMPANY • BERVEN CARPET CORP. • DOWNS CARPET, INC. • PHILADELPHIA CARPET CO. • STIX, BAER & FULL CO. • B. ALTMAN & COMPANY



"You Need This Book If You Handle Carpet! It's Free"

It tells how America's leading carpet firms solved these important problems:

How to eliminate cut-order bottlenecks

How to lower labor costs

How to expand present capacity

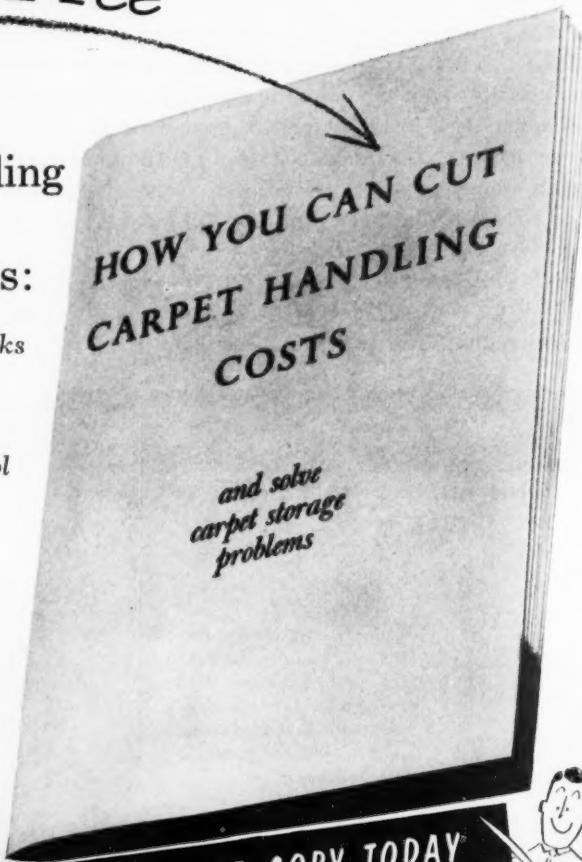
How to maintain better inventory control

How to stock in greater depth

How to take full advantage of present equipment

How to modernize at low cost

This comprehensive booklet contains vital information for carpet mills, branches, wholesalers and retailers. It is free upon request. There is no obligation.



SEND FOR YOUR FREE COPY TODAY

The Easiquip Company
1522 N. Indiana Street, Los Angeles 54, Calif.
Please send my free copy of "How You Can Cut Carpet Handling Costs."

INDIVIDUAL _____

FIRM NAME _____

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

EASIQUIP
ROLLSTOR SYSTEM

for better handling
and storing
of broadloom carpet

BON MARCHÉ • J. W. ROBINSON CO. • BIGELOW SANFORD CARPET CO. • FOLEY BROS. • HARDWICK & MAGEE

Circle No. 51 on Reader Service Card for more information

want high speed
plus endurance?
How's this . . .

1000 HOURS
at 3600 R.P.M.
UNDER FULL
LOAD!

If you were to drive 90,000 miles up an incline at 90 m.p.h., you would approximate the performance of the Model 24A, 331 cubic inch displacement Chrysler Industrial Engine pictured below.

To prove the power of Chrysler Industrial V8 Engines . . . their ability to run for long periods of time at high speed . . . on March 17, 1954 Chrysler engineers placed a production model Ind. 24A Engine on an endurance dynamometer at Chrysler Central Engineering Laboratories. Objective: 1000 hours operation at 3600 R.P.M. under full load.

During every one of the 1000 hours, the Chrysler Ind. 24A Engine delivered an average of 174 horsepower and when shut down, the engine was still in perfect operating condition.

During the run no service was necessary beyond minor maintenance care, such as oil changes and very infrequent spark plug changes and point adjustment. Yet, following disassembly of the engine, the only wear noted was negligible—no more than you might expect from an engine that has been operated for 1000 hours within a long period of time.

While there is every reason to believe that this is a record-breaking endurance run (and don't forget it was made at 3600 R.P.M. under full load), we are confident that every Chrysler Industrial V8 Engine will at least equal this astounding record.

This proves too, beyond a doubt, that the Chrysler Industrial V8 hemispherical combustion chamber design with its short-stroke, low-friction construction, makes an ideal power plant for any equipment that requires continuous high speed operation. Furthermore, in installing a Chrysler V8 Engine in preference to a diesel engine of similar horsepower, you can reduce your size estimate by one-half, your weight by two-thirds, and your cost factor by three-quarters!

For detailed information on the Model 24A or any Chrysler Industrial Engine, see a Chrysler Industrial Engine Dealer, or write: Dept. 209, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

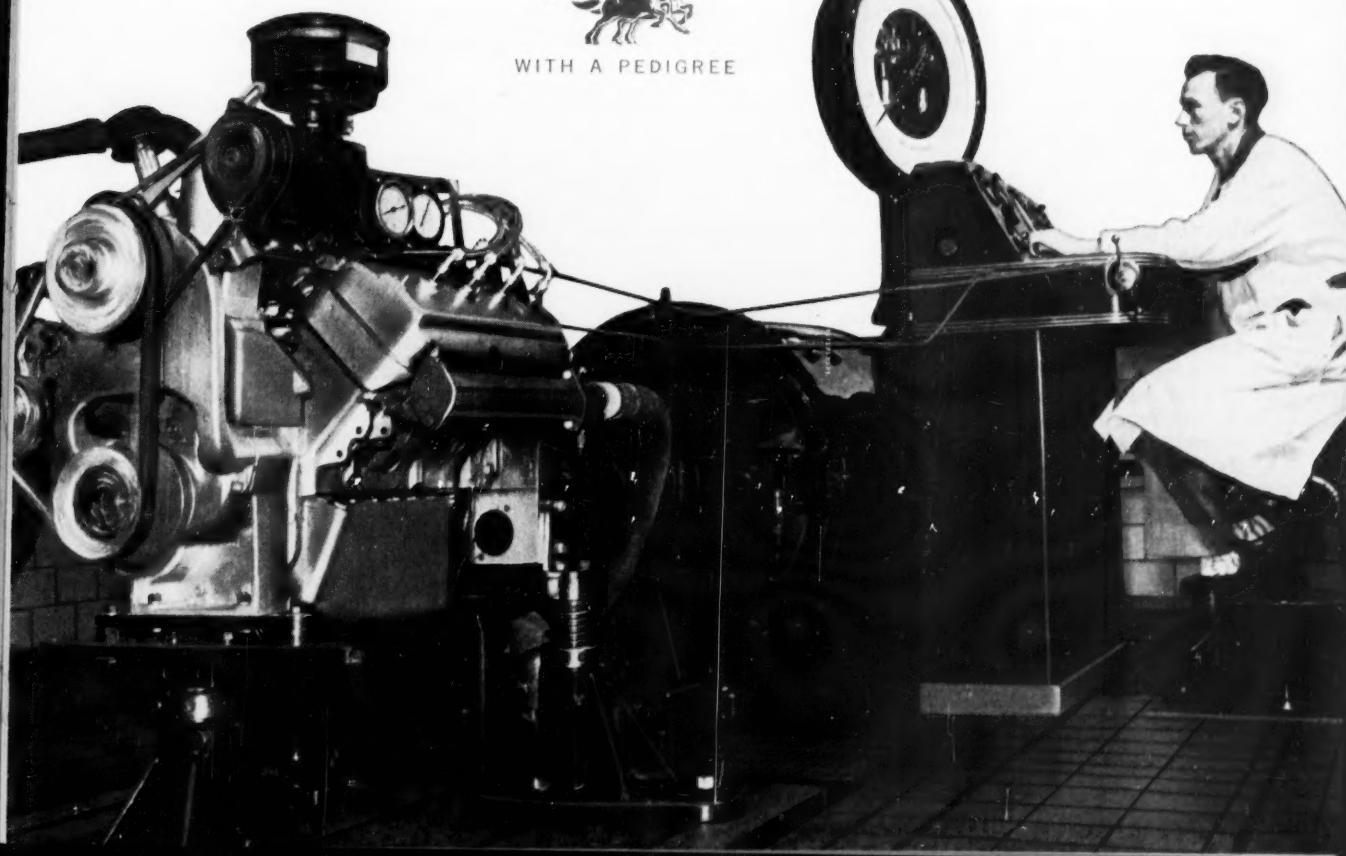
CHRYSLER *Industrial Engines*

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

HORSEPOWER

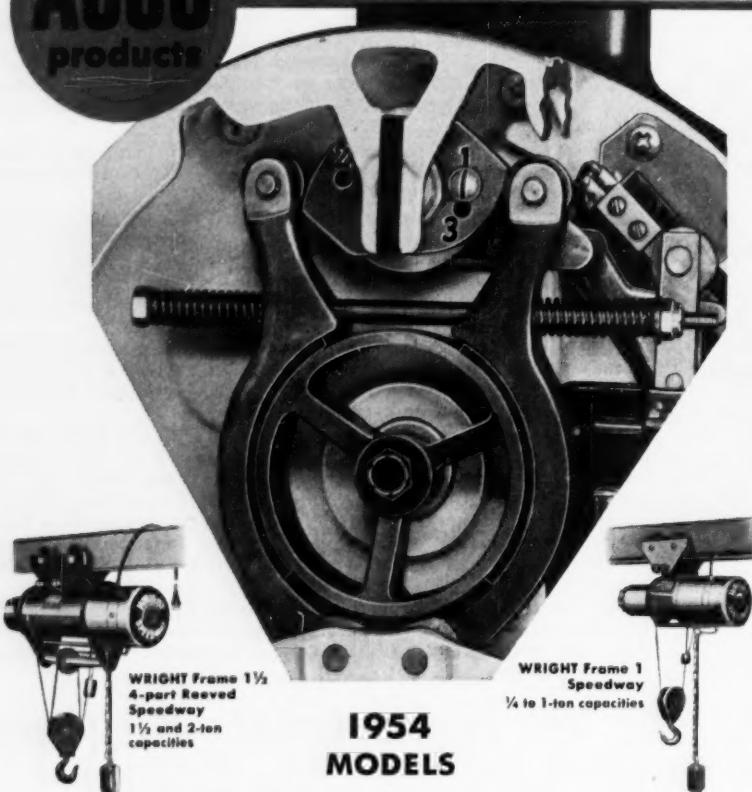


WITH A PEDIGREE





Why WRIGHT Hoists



Nothing to adjust but the cam!

- The brake assembly pictured above for the WRIGHT FRAME 1 SPEEDWAY HOIST is your assurance of maximum hoist service... minimum down time. Adjustment of this cam-actuated brake to compensate for brake lining wear is literally "as simple as ABC." There is no guess work about it.

When the load hook starts to drift, remove the screw shown at position No. 1 (see picture), swing the cam around so that position No. 2 is in line, and replace the screw that secures the cam to the solenoid lever arm. For the final one-third of brake lining wear, set the cam at position No. 3. This repositioning of the cam is the ONLY adjustment to be made by the users of WRIGHT Hoists. The

brake springs and solenoid are factory-set... NEVER need adjustment for brake lining wear.

Long life is a built-in characteristic of these hoists. They are built and guaranteed for service to the limit of the duty cycle of 1½ H.P., 30 minute, totally enclosed NEMA specification motors. These 1954 models provide full accessibility of parts for lowest maintenance costs. To get at the brake and controller, you remove two screws which hold the end cover. To get at the limit switch, transformer, and solenoid coil, you remove three screws and the side cover comes off. With this full accessibility you can make a brake adjustment or replace electrical parts in a matter of minutes.

Remember, PRICE + MAINTENANCE = COST. For full details on the low-cost WRIGHT Frame 1 Hoists see your WRIGHT distributor or write our York, Pa., office for literature.



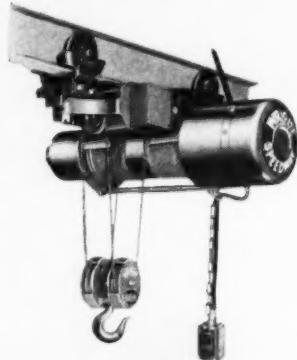
**Wright Hoist Division
AMERICAN CHAIN & CABLE**

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York,
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

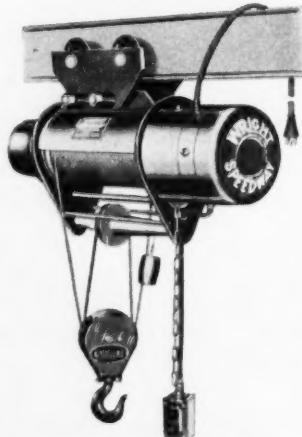


IMPORTANT Maintenance Features

- LONG LIFE**
- SERVICE ACCESSIBILITY**
End and side covers quickly removed for complete accessibility of brake, controller, solenoid, limit switch, transformer
- SOLENOID ASSEMBLY**
never needs adjustment, designed to compensate automatically for brake wear
- BRAKES**
require only two pre-determined field settings...no guess work
- FRAMES**
Strong, ductile
- GEARS**
Alloy steel
- MOTORS**
NEMA specifications



**WRIGHT Frame H-1
Close Headroom Speedway**
¼ to 1-ton capacities

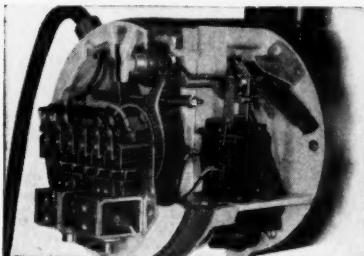


**WRIGHT Frame 1½
4-part Reeved Speedway**
1½ and 2-ton capacities

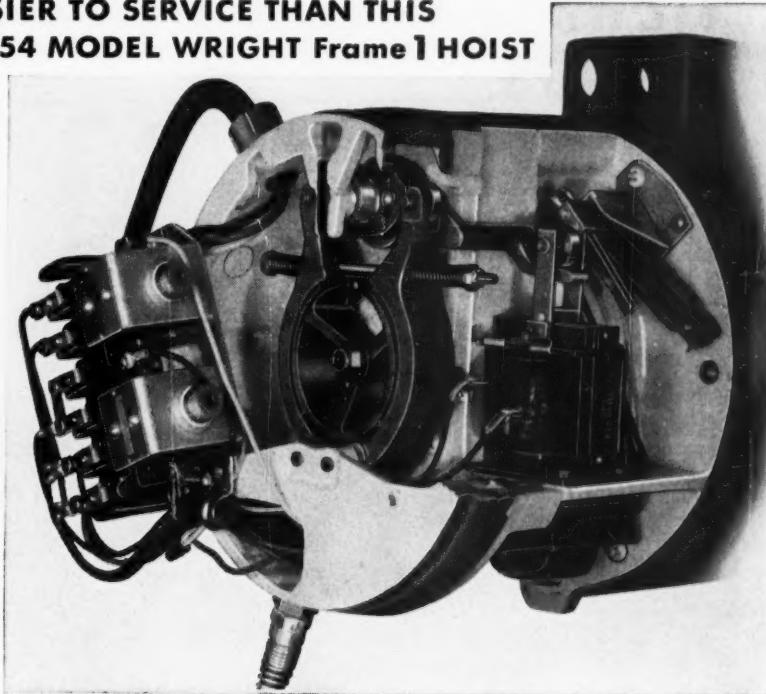
Smash Maintenance Costs!

**NOTHING COULD BE EASIER TO SERVICE THAN THIS
1954 MODEL WRIGHT Frame 1 HOIST**

This partly cut-away illustration (with controller swung out of position) shows the full accessibility of parts provided in the 1954 models of WRIGHT Frame 1 Speedway Hoists. Note the simple, rugged design of brake and solenoid assembly.



Controller back in operating position. Note that brake cam can be reset without moving controller.



What Plant Men Are Saying about Frame 1 Wright Hoists . . .

Chief Electrician says: "Now we have a hoist that is simple to service."

Maintenance Superintendent says: "We are going to buy one of those hoists, put it on our toughest job and equip the brake with a counter. I'll bet that brake will operate a million times without an adjustment. This is what we've been waiting for,

it's a cinch to get at, and we can adjust the brake, and do it right, in a matter of minutes."

Plant Engineer says: "If all small hoists were new WRIGHT SPEEDWAYS, we could sure cut our maintenance costs."

Electrician says: "I like the way the electrical controls are grouped, and they're easy to get at."

**Write for this
new booklet...**

This new booklet (#DH133B) gives complete information on the 1954 Model WRIGHT SPEEDWAY ELECTRIC HOISTS, Frame 1 and 1½ (500 to 4000 lb. capacities). The booklet fully describes and illustrates the new designs



and features that minimize maintenance costs, and make WRIGHT Speedway Frame 1 and Frame 1½ Electric Hoists the easiest of all hoists to adjust and service. Write our York, Pa., office for a copy of this Booklet #DH133B.

Initial Purchase Price + Maintenance = TOTAL COST

Circle No. 6 on Reader Service Card for more information

NEWS VIEWS TRENDS

THOMAS BUYS LANHAM CO.

J. Faulkner Thomas, president of Thomas Truck and Caster Company, Keokuk, Iowa, announced the recent purchase of the Lanham Company of Louisville, Kentucky. New buildings are planned by Thomas in Keokuk for products which will continue to carry the Lanham name. The sales distribution system of both Thomas and Lanham will continue as previously.

HINDE & DAUCH INCREASES HOLDINGS

Purchase of controlling interest in The Corrugated Paper Box Company, Ltd., was announced by W. H. Palm, president of Hinde & Dauch Paper Company of Canada, Ltd. Corrugated Paper Box Company and its two wholly-owned subsidiaries, Hilton Brothers, Ltd., and Carton Specialties, Ltd., operate four factories in Ontario, Manitoba and Alberta. J. A. Whealy has been re-elected as president and director of Corrugated Paper Box. Other newly-elected officers and directors of the company are W. H. Palm, vice president and director; T. E. Lloyd, treasurer and director; C. E. Frohman, director; David L. Luke III, director; and E. R. Bluetner, secretary.

'55 SIPMHE SHOW SET FOR NEW YORK

The Tenth Anniversary National Industrial Packaging and Materials Handling Exposition will be held in New York City in the fall of 1955. Exhibit space cost will be \$2.50 per square foot, and floor plans are now available. Space assignments will be made on a first come first served basis, after past exhibitors have had an opportunity to make their selections. The announcement came from Earl B. Candell, national president of SIPMHE.

BEMIS SPONSORS COLLEGE STUDY

Bemis Bro. Bag Company will again this year sponsor fellowships for two college professors for the study of the company's organization and operation. The fellowships were granted through co-operation with the Foundation for Economic Education, which established and directs the College-Business Exchange Program.

BUFFALO JOINS CONVEYOR TREND

Engineers of Hewitt-Robins, Inc. are working on the development of a passenger conveyor that would be suitable for use in the New York Central railroad station in Buffalo to carry passengers up one or more of the long ramps leading from the train level to the first floor of the station. Thomas Robins, Jr., president of the firm, said the conveyor will consist of a rubber belt about six feet wide which will travel one and one-half miles an hour. He said the conveyor is being developed in response to a growing demand for this type of equipment in and around railroad stations, airports and supermarkets throughout the country.

AUTOMATION EXPOSITION

The Production Engineering Show is scheduled to run concurrently with The Machine Tool Show in Chicago, September 6-16. Termed the "Automation Exposition", the show will cover the field of production and processing, and will encompass any production process in which the sound application of engineering techniques and control equipment can measurably contribute to automatic production.



Big and "little" friends: 26,000 and 10,000 lb. trucks

Save more money by handling bigger loads —with the world's largest standard lift truck—**26,000 lbs.**

! The Clark-Ross Y-260 will handle bigger outdoor loads than any other lift truck, and it will go places where no other lift truck can travel! This truck is big enough to handle jobs which formerly required a crane and operator, hook man and trucker. It has the utmost traction and flotation—huge 14.00 x 20 tires are standard front and rear, with excellent weight distribution and 9 in. minimum underclearance. Its 17½ ft. turning radius permits it to be used in yards laid out for smaller trucks.

This Y-260 is built for 26,000 lbs. (at 36 inches)—not just beefed-up. It's as easy to drive as a truck half its size; power steering and power brakes are standard. And a brake selection switch enables the driver to apply brakes to either drive wheel, when one wheel has lost traction in slippery grounds. Maintenance access is excellent, wrap-around coun-

terweight has minimum over-hang, operator visibility is outstanding. In general, *this lift truck is a beautiful brute!*

For big jobs, you'll want more details on the Y-260. Call your local Clark dealer, listed in the Yellow Pages under "Trucks, Industrial," or send the coupon.

CLARK
EQUIPMENT

Industrial Truck Division
Battle Creek 13, Michigan

Send details on Y-260

Name _____

Firm _____

Address _____

City _____

Circle No. 40 on Reader Service Card for more information

NEWS, VIEWS, TRENDS

Continued

MAINTENANCE SHOW SUCCESS IN WEST

The First Western Plant Maintenance Show registered nearly 7000 key personnel from Pacific Coast industrial plants during its three-day exhibition at Pan Pacific Auditorium in Los Angeles. The response to the show and the keen interest of western plant owners and managers in the maintenance function has encouraged the management firm of Clapp and Poliak to continue it in Los Angeles in 1955, according to Saul Poliak, company head. Poliak said, "We have arranged with Pan Pacific Auditorium for the dates of July 12, 13 and 14, and many exhibitors already have applied for space."

PROGRESS REPORT FROM LeTOURNEAU

R. G. LeTourneau, Inc. has released a progress report after one year of operation since the sale of its earthmoving machinery business and the entry into new equipment fields. The company is continuing and expanding its operations at its Vicksburg, Mississippi and Longview, Texas plants, and stock value has nearly doubled on the books, according to president R. G. LeTourneau, who has reiterated his intention of improving other lines as much as his company improved the earthmoving equipment line.

ST. PAUL COMPLETES MOVE

St. Paul Hydraulic Hoist has completed the move of its sales and service functions, covering both domestic and export activities, to its new expanded plant site in Mattoon, Illinois. The firm transferred its manufacturing operations from Minneapolis last winter, but sales and service remained at the old plant site to facilitate operations during the transition period of the move.

NEW STANDARD STRUCTURE

The new 21,000 square foot, two-story office building of Standard Conveyor Company, North St. Paul, Minn., was officially dedicated at an open house recently. The building is air conditioned throughout, and houses the engineering, research and development, sales and other administrative departments of the company, plus a display area. According to the firm's president, H. L. Donahower, the new structure is another step in the company's enlargement and modernization program.

WAYNE CRANE DESIGNS FOR AIR

The Wayne Crane Division of American Steel Dredge Company in Fort Wayne has been awarded a research and development contract which covers a new type of self-propelled, rubber-tired airborne crane. The contract calls for development and fabrication of a small, lightweight crane with a heavy-work capacity, capable of being dropped by parachute from cargo airplanes flying over combat zones. The equipment is being especially designed under the direction of the Corps of Engineers' Research and Development Laboratories of Fort Belvoir.

CONTAINER FIRM UPS VOLUME, ADDS SPACE

Approximately 60,000 square feet of manufacturing space and new equipment of the latest design have been added to the Los Angeles plant of National Container Corporation. The plant now contains 150,000 square feet under one roof. The new expansion was necessitated by a steadily increasing volume of business, according to George J. Schneider, vice president in charge of Coast operations.

HEAVY DUTY TRAILERS

UP TO 60-TON CAPACITY



THOMAS

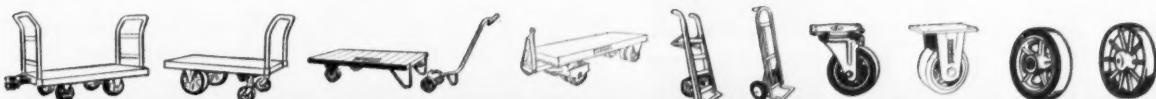
NO. 285

(20-TON CAPACITY)

THOMAS can produce the trailers you need in capacities up to 60 tons. Built on a rugged, structural steel channel frame, having three or more lengthwise members, these trailers are topped with decks of heavy steel plate. Available in "Job-Suited" sizes and with stake pockets located to meet your exact materials handling requirements. The heavy-duty, double ball race fifth wheel assures

easy maneuvering with any load. Usually ordered with ring-type "Safety" tongue which will not drop to the floor. Your choice of rear coupler. Available with steel or rubber-tired, roller bearing wheels.

There is a THOMAS Representative in every Trade Area. Write for free literature describing the complete line of THOMAS "Job-Suited" Trailers, Trucks, Casters and Wheels.



THOMAS TRUCK & CASTER Co.

42 MISSISSIPPI RIVER, LEONARDTOWN, MARYLAND

Circle No. 150 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

There's no stopping
Hartley...since he discovered
Heppenstall Tongs



There's no limit to the range of jobs
that **HEPPENSTALL SAFE-T-TONGS**
handle quickly, safely, economically

Whatever your handling job requires—regardless of shapes,
weights, or sizes—a Heppenstall Safe-T-Tong engineered
specifically to your needs will help you speed
materials handling operations with greater efficiency
and safety. Call Heppenstall now. Obtain complete
information and technical assistance. Heppenstall
Company, Pittsburgh 1, Pa. Sales offices in
principal cities.

Heppenstall

...TONGS FOR EVERY LIFTING PROBLEM
Circle No. 71 on Reader Service Card for more information

GLOBE OILIFT® Simplifies moving paper and supplies between printing plant levels

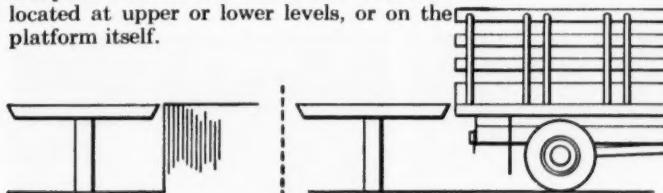
In a busy printing plant, the receiving department is about five feet below the level of the area where paper cutters and presses are located. Moving paper stock and supplies between these levels was a two-man job that often delayed presses and tied-up the company's fork lift truck.

The problem was solved by installing a standard Globe Loading Lift!

Now, material to be moved between receiving department and the upper plant level is rolled onto the 6' x 8' checkered-steel platform of the Globe Loading Lift. A hydraulic cylinder 10 $\frac{1}{8}$ " in diameter furnishes the 6000 lbs. lifting capacity that raises the platform to the upper level smoothly and *safely*. Push-button controls are located on the platform itself, and one man can handle the job of moving loads from one level to the other. This results in substantial savings in labor costs and the elimination of costly delays.

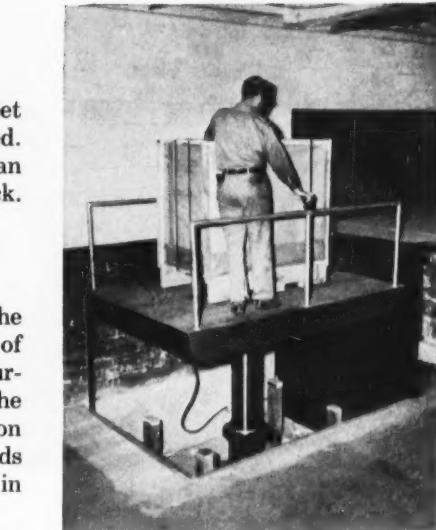
This installation is just one example of the many problems of lifting, loading, positioning, and materials handling solved by Globe OILIFTS. Use the coupon to get additional data.

DIAGRAMS SHOW how this Globe OILIFT can be used as a Ramp Eliminator or as a Loading Lift—just two of many ways it can be used to solve materials handling problems. These Globe Hydraulic Lifts are available with either one or two cylinders in capacities up to 40,000 pounds. Standard lifting height is 58", but can be varied to suit special needs. Other variations available are: push-button or lever controls... controls located at upper or lower levels, or on the platform itself.

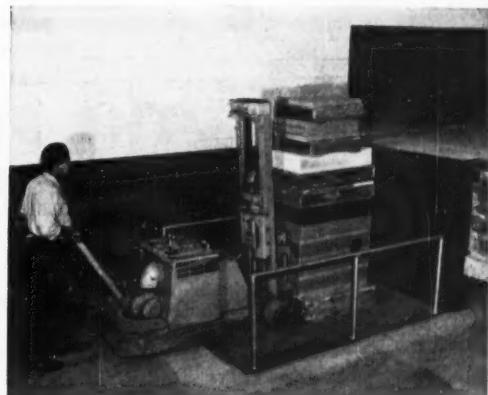


GLOBE HOIST COMPANY

East Mermaid Lane at Queen Street, Philadelphia 18, Pa.



Here's a load being moved between plant levels. Operator's hand is on the conveniently located push-button controls.



Here a load of paper stock on pallets is rolled onto the Globe Lift at the lower level where platform recesses flush with the floor.

Globe Hoist Company
East Mermaid Lane at Queen St.
Philadelphia 18, Pa.

F-625

Please send me additional information on
Globe OILIFTS.

Name.....

Company.....

Address.....

City..... Zone..... State.....

TORTURE TESTS PROVE



BEFORE TEST

Three standard cushion-type solid tires were used in this test. The Monarch Mono-Cushion was selected from stock awaiting shipment . . . competitive tires were purchased from authorized dealers of two other leading industrial tire manufacturers.



AFTER TEST

This unretouched photo shows comparative condition of same three tires after each had undergone an absolutely identical testing procedure. All tests were made the same day . . . using a constant time interval and same testing equipment.

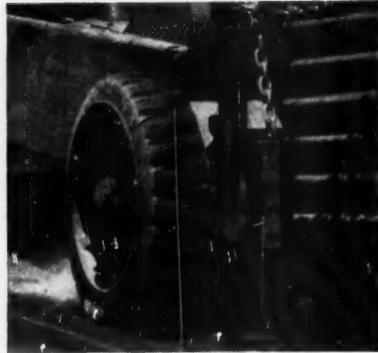
... THE SUPERIORITY OF *Mono-Cushion®* INDUSTRIAL TIRES



TEST EQUIPMENT . . . a standard dual-drive lift truck carrying a loaded tote box weighing 4,864 pounds. Deliberate overload of approximately 44% created by mounting a single 22x6x16 cushion tire on each drive-wheel (which normally carries dual tires of this size). Overload increased severity of test and accelerated tire fatigue.



TEST PROCEDURE . . . loaded truck was operated continuously at maximum speed for a fixed time interval. Truck's brakes were jammed on periodically throughout testing period to cause sudden stops and create extreme shock loads.



TEST TRACK . . . was a combination of black top and gravel road surfaces to simulate severe operating conditions (for both indoor and outdoor applications). A railroad spur in the plant yard was included in the test pattern.

Circle No. 113 on Reader Service Card for more information

HERE ARE THE FACTS

THAT MEAN SAVINGS TO YOU



- (1) ONLY MONO-CUSHION SURVIVED THE TEST . . . the other tires were too damaged for normal use. TIRE "A" lost a section of tread 6 inches long and 1 inch deep. TIRE "B" was badly chipped and had two deep splits that reached almost to rim. This is additional proof that *Mono-Cushion is a better buy . . . it costs less initially and lasts longer.*
- (2) MONO-CUSHIONS GIVE YOU MORE TON-MILES PER DOLLAR . . . because the rubber stocks developed especially for these tires are compounded from *higher quality materials than are used in the best "premium" passenger car tires.* This is no idle claim. It is another fact previously known only by Monarch's key personnel.

- (3) MONARCH SUPPLIES PERFORMANCE-PROVEN INDUSTRIAL SOLID TIRES. Working closely with lift truck manufacturers, Monarch engineers have created tire and tread designs that assure maximum cushioning action for vehicles, loads, floors and drivers. A leading supplier of pressed-on tires, Monarch has a type and size to meet every lift truck requirement.

WHEN YOU NEED TIRES, REMEMBER MONARCH
... THE KING OF THE SOLIDS

- YOUR NEAREST MONARCH DEALER is listed in the Yellow Pages under "Trucks-Industrial-Parts & Supplies" or "Tires-Industrial". If current directory does not have a listing, write direct for complete catalog and name of nearest dealer.



3688-MR
210 Lincoln Park • Hartville, Ohio
7-255 General Motors Bldg., Detroit 2, Mich.

FLOW • SEPTEMBER, 1954



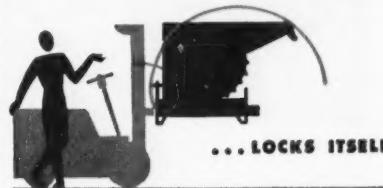
For their outstanding sales performance during 1953, A. G. Morrison, Dan Stearns and Floyd Struwin (l. to r.) were



honored at a meeting of the board of directors of Clark Equipment Company. Struwin's firm, Material Handling Sales Corporation, Detroit, sold more than \$4,000,000 worth of material handling equipment. Morrison Industrial Equipment Company, Grand Rapids, of which Morrison is president, led all Clark domestic dealers in terms of percentage of total commercial sales of fork trucks. Stearns is regional manager of Clark's mid-western region. His territory led in overall sales volume, accounting for 30% of Clark domestic sales.

The appointment of Richard C. Sundstrom as sales specialist for transportation communication equipment has been announced by the General Electric Company. He will make his headquarters in Cleveland.

H. W. Hildebrand, sales manager of the Materials Handling Division of Union Steel Products Company, recently announced the appointment of Jack Mahaffey Equipment Company, 1200 Freeport Road, Pittsburgh, as western Penn-



**...and
dares you
to damage it.**

This is no ordinary hopper. It's a Roura hopper. And Roura makes 'em rugged. It takes on the toughest assignments . . . day in and day out . . . and comes back for more. Even the crash-bang handling of careless lift truck operators doesn't bother a Roura for it's built of extra heavy metal . . . welded with care . . . braced and double-braced . . . for years of trouble-free service.

Your Roura Self-Dumping Hopper will cut hand-unloading costs at least 50% . . . pay for itself before you know it. Available in sizes from $\frac{1}{2}$ to 2 cubic yards for use with fork or platform lift trucks, mounted on live skids or with malleable or rubber tired casters.

ROURA
Self-Dumping
HOPPER

 HERE'S HOW to get more details about Roura Self-Dumping Hoppers. Just attach this coupon to your letterhead . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

Circle No. 139 on Reader Service Card

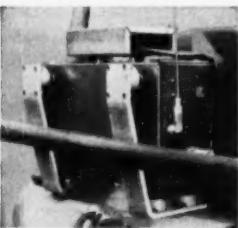
Cuts Waste Motion with RCA 2-Way Radio



Dispatcher of trucks and materials handlers assisted by a clerk can coordinate the efforts of truck drivers and labor crew from a centrally located office.



Foreman stops at truck to radio instructions to office—another one of the "extra benefits" reported.



Special "shock mounting" developed by RCA for this installation to cushion equipment against rough roads.

Less Than One Year's Pay-Off for Carfone Equipment Predicted at Rohm & Haas

Service peaks on Mondays and Fridays at the 46-acre plant of Rohm & Haas at Bristol, Pa. used to tax materials handling equipment beyond capacity. Empty runs wasted men and trucks, cut down on efficiency. Instant RCA 2-Way Radio communication with five fork lift and three stake trucks, commencing in March, this year, licked the problem. In addition, since using radio they have eliminated much "paper work" and now are using only one form instead of four.

Based on an estimated annual savings, the materials control area supervisor predicts that the equipment will pay for itself in less than a year.

RCA 2-Way Radio permits drivers to get started on new assignments at a moment's notice. Dispatcher can "pick-up drivers" at any location to efficiently eliminate wasted time and trucks. Even in high noise level areas, the two-way flow of information is fast, continuous and positive, thanks to directional re-entrant horns.

RCA Carfone equipment can do a similar job for you in handling materials efficiently in your plant . . . indoors or out. Precision manufacturing and built-in quality for which RCA is famous, are your guarantee of top performance in the toughest kind of operation. Mobile units fit almost any handy location, require a minimum of maintenance, permit quick servicing when needed. The RCA Service Company provides nation-wide service facilities if desired. Why not get complete information now?



RADIO CORPORATION of AMERICA
COMMUNICATIONS EQUIPMENT

CAMDEN, N.J.

Radio Corporation of America
Dept. I-131, Building 15-1, Camden, N. J.
In Canada: RCA VICTOR Company, Limited, Montreal

- Please send information on RCA 2-Way Radio
 Have an RCA representative get in touch with me

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Circle No. 129 on Reader Service Card for more information

SALES FIELD

Continued

sylvania sales representative. The firm was organized in 1945 and is managed by **Jack K. Maffey, Jr.**

Boris J. Glavash will head the newly created European division of the export sales department of Hyster Company in Nijmegen, The Netherlands. He has been associated with Hyster for six years as **B. J. Glavash** sales engineer and Latin American representative. Clyde R. Dean, head of the firm's worldwide export department in Peoria, Illinois, said the global expansion of new industries and subsequent demand for material handling equipment had necessitated an all-round expansion in the manufacturer's overseas activities.



B. J. Glavash

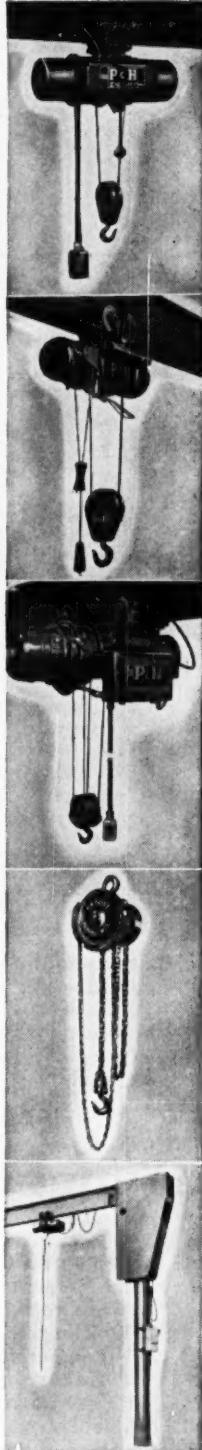
L. West Shea will join the staff of **R. K. Hanson Associates** on September 15. He will devote his time to material handling sales and marketing consultation, and trade association activities. Shea is a past president and director of The Material Handling Institute, Inc.

Lee Daniels, vice president of **Buda Company's** material handling division has announced the appointment of **C. L. Thompson** as sales manager. Thompson was formerly general manager of the Oregon branch, and prior to that was assistant general manager of the California branch.

Alvey Conveyor Manufacturing Company announced the appointment of **Robert C. Gossling** as representative in the Pittsburgh, Pa. office, a branch of the Cleveland district. Goss-

P&H Zip-Lift Electric Hoist (Pushbutton control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile—in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.



P&H Zip-Lift Electric Hoist (Rope Control)

You can do anything with the two rope controlled models that you can with the Pushbutton Zip-Lift. The less expensive rope control gives you a break on price—doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.

P&H Hevi-Lift

For heavy loads—and your own particular problem. The Hevi-Lift is a custom-built hoist—manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available—then see your P&H distributor for a concrete solution.

P&H Hand Chain Hoists

Perhaps you're in the market for a hand chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-gearred; Timken or roller bearing trolleys; Army-Type trolleys—whatever you need. Ask for literature on the complete line.

P&H Jib Cranes

Hang your hoist on a P&H Jib Crane—then you've got a dependable one-two combination working for you. Eight different models—bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



"10 P&H Hoists operate 12 years under rough, tough conditions without excessive maintenance"

"periodic oil changes only maintenance in four years"



"tonnage is greater because of easier handling"

"temperature 185°—salt in the air—yet P&H Hoists operate with no trouble whatsoever!"



"14 years use in heat-treating department with no sign of wear under adverse heat and dust conditions"



other users talk like **P&H Hoist salesmen**

You can pay the operating cost of a sturdy **HOIST** ... by saving only three minutes lifting time per shift!

Electric Motors used 11 **HOISTS** to speed up even operations all over plant.

By FREDERIC MCGOWAN Milwaukee, Wisconsin

In the seven first years since we built the first P&H Hoist for our plant, we have increased hundreds of thousands of dollars in sales and earned a 100% profit on net sales other companies as well. This is a record which we are very proud of. The secret of our success is that we have been able to offer a product which has proved to be the best in its class. We have sold over 100 units of our new 10-ton hoist to the FEDERAL TIRE CO. in Milwaukee, and we are now supplying them with 10-ton jib cranes, 10-ton overhead traveling cranes, 10-ton bridge cranes, 10-ton overhead traveling cranes, and 10-ton jib cranes. In every position they trust us for the best equipment and assistance in the sale, supply of our products.

11 ZIP-AUFT LIFTING FAILURE OF HOIST

The first time we installed our 10-ton Zip-Auf lift, it immediately became a dead weight. It was necessary to haul it around in a truck to get it off the floor. After a few days of trying to get it off the floor, we found that it would not move. The reason for this was that the hoist had been installed in a room where the ceiling height was only 10 feet. The hoist was 12 feet high, so it could not be moved. This was a major problem for us, as we had to find another way to get the hoist off the floor.

TRYING OPERATIONS UNPREDICTED

One year ago, we installed our 25-ton Zip-Auf hoist of 30-ton capacity to handle the American Metal Products Company's needs. The hoist was installed in a room where the ceiling height was only 12 feet. The hoist was 14 feet high, so it could not be moved. This was a major problem for us, as we had to find another way to get the hoist off the floor.

The quotes are typical of the spontaneous enthusiasm of P&H Hoist users.

Once you get a P&H Hoist in your shop and watch its matchless efficiency at work you'll talk that way yourself. And you'll talk even louder when you get a look at the cost sheets showing how your materials-handling costs have dropped since you turned the job over to P&H Hoists.

All of the quotes on this page are excerpts from actual case histories. They come from firms like Falk, Evinrude, Studebaker, etc. There's no better recommendation we can give you.

You can have some of these reports to read over and see how other companies have made use of the time-saving, money-saving abilities of these versatile P&H Hoists. Simply fill out the coupon below and send it along. We'll drop the reports in the return mail to you. You might get some new ideas for P&H Hoist use in your plant.

Tear out and mail today →
P&H HOISTS

**HARNISCHFEGER
CORPORATION**

4643 W. National Ave. • Milwaukee 46, Wis.

P&H Hoists
HARNISCHFEGER CORPORATION
4643 West National Avenue, Milwaukee 46, Wisconsin

Please send me a few representative case histories on P&H Hoist use.

Name.....

Firm.....

Address.....

City..... State.....

Title.....

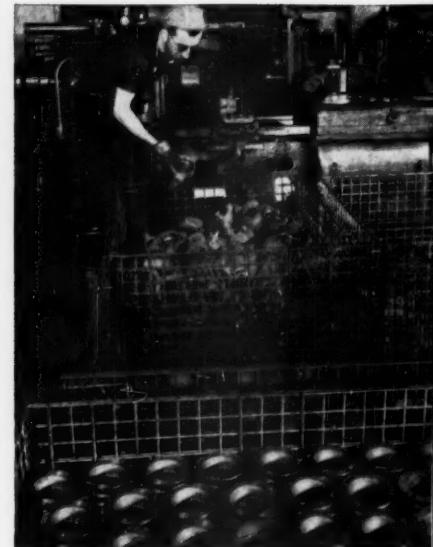
2892



1. Cargotainers used at Gehl Bros. Manufacturing Company.
Here's a typical plant . . .



2. Cargotainers save storage area for farm equipment parts . . .



3. Streamline flow of materials in production . . .

Where Cargotainers® Save Three Times Their Cost

For nearly a century (since 1859) Gehl Bros. Manufacturing Company has specialized in equipment for the gathering, handling, and storage of forage crops. Today Gehl's forage harvesters with five attachments, forage and grain blowers, and hammermills are streaming by the thousands from bustling production lines at West Bend, Wisconsin, to farmers across the nation and in many foreign lands.

Yet the Gehl (pronounced "Gale") plant is not a large one. Employing about 400, it covers 150,000 square feet of manufacturing space. Obviously it is geared for efficiency. Gehl experts in the production of forage

crops are continuously applying to their own plant operations the same advanced techniques they have developed for the farmer.

For example, an integral part of Gehl's streamlined production system is the Cargotainer. It is the stackable, collapsible, lightweight, heavy duty steel wire box for handling materials—an exclusive product of Pittsburgh Steel Products Company.

With 2,100 Cargotainers now in service at Gehl, there are more than five for every employee. And the total base area of these Cargotainers is equal to about one-sixth of the total area of the plant.

• **Savings Begin**—Gehl first began using Cargotainers to replace cumbersome, costly wooden tote boxes in 1950. The tote boxes were 24" x 36" x 16" and cost about \$2 apiece to make.

These boxes had certain limitations: (1) They could be stacked only to a height of about 5 feet. (2) Parts within the boxes could not be piled above the top of the box. (3) Contents of the boxes were not easily inventoried. (4) With good care the wooden boxes had a useful life of about 12 months.

The welded wire mesh Cargotainers to replace them are 36" x 46" x 24" with a 4,000 pound capacity and cost about \$42 apiece. Here's how the ini-

tial cost (\$42 for the Cargotainer versus \$2 for the wooden tote boxes) actually saves three times the investment:

The cubic volume of the Cargotainer is nearly three times that of the old fashioned tote box. Because of sturdy reinforced construction, fully-loaded Cargotainers can be stacked 5-high (about 12-feet) using storage space in many sections of the plant right to within one foot of the ceiling. This is over twice as high as the tote boxes could be tiered.

Clearance provided by special seven-inch fabricated steel legs enables storage of parts within the Cargotainer above the top level of the wire mesh and provides easier handling by fork lift trucks. The visual inventory afforded speeds selection of parts for production and processing units. And as an added safety feature the threat of toppling tote boxes has been removed, reducing accidents and parts damage.

• **Longer Life, Less Area**—After four years' experience with Cargotainers, Gehl finds the original 261 Cargotainers are still in perfect condition and should give many more years of service. Already Cargotainers have outlasted the wooden tote boxes four to one, and that ratio will continue to rise with every year of service.

Since the Cargotainers carry nearly three times as much as the tote boxes, in two more years Cargotainers purchased in 1950 will have paid for themselves by eliminating the cost of tote boxes.

The biggest saving to Gehl has been in plant storage area. Through higher tiering (Photo No. 2), Cargotainers have saved the equivalent of 25,000 square feet of floor space—equal in cost to about twice the total investment in the 2,100 Cargotainers.

• **Other Savings**—Formerly forged and cast parts from suppliers arrived at Gehl's plant, shipped loose in trucks. They had to be unloaded manually into tote boxes and weighed.

This required the work of three men for two and one-half hours.

Using Cargotainers, the truck delivering parts is unloaded and weighed by two men in 15 minutes—one tenth the time required before. This saves Gehl more than \$1,000 a month in handling costs alone. In four years savings equal half the total investment in Cargotainers.

Formerly transmissions were loaded manually into a fabricated steel rack and immersed in cleansing solution for degreasing. Now the degreasing pit has been rebuilt for Cargotainers, and an operation that once required 16 hours now takes only six (Photo No. 4).

Uncalculated, but considerable, savings have resulted from speedier flow of production. Parts are fed directly to production equipment where machine operators process them and feed finished parts into more Cargotainers (Photo No. 3).

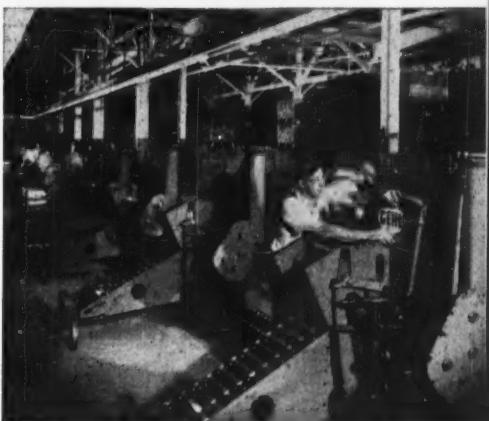
Filled with finished parts, Cargotainers move to the central production line where the forage harvester, for example, is being assembled (Photo No. 5). Collapsed empties, four to a bundle, are then returned to suppliers, or go back to initial production units.

• **The Pay Off**—"We don't know how we ever got along without them. Cargotainers are certainly an indispensable part of our operation today," says one Gehl official. In the opinion of Gehl engineering, installation of Cargotainers has already saved over three times their cost.

Chances are good that many of these savings are available to you with the installation of Cargotainers. Industries now using them include: Fabricated metal products, machinery and electrical producers, foundries, meat packers, food chains, storage warehouses, textile manufacturers, dairies and bakers, bottlers, chemical and process industries, hardware suppliers and many others. Why not let one of our materials-handling engineers give you a free estimate?



4. Reduce handling problems in processing . . .



5. Speed production line assembly.

Pittsburgh Steel Products Company

a subsidiary of

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

"Everything New But The Name"

Circle No. 84 on Reader Service Card for more information

Pittsburgh Steel Products Co.
1401 Grant Building, Pittsburgh 30, Pa.

Gentlemen: Please send at once a copy of your free booklet "Wire Cargotainers and Pallets."

Name _____ Title _____

Company _____

Address _____

SALES FIELD

Continued

ling graduated from the College of Engineering at Cincinnati University in 1938, and came to Alvey from the Pittsburgh Screw and Bolt Corporation, where he served as assistant to the chief engineer.

Gus Baurnfind is manager of the Richardson Scale Com-

pany's newly opened branch office in Memphis, Tenn., located at 211½ Court Avenue. The firm's Atlanta, Georgia, branch has moved to 423 Grant Building, where **E. C. Mott** is manager.

The following district office personnel changes have been announced by **G. E. Seavoy**, vice president in charge of sales, **Whiting Corporation**: **Bernard L. Heinen** will operate

out of Houston, Texas; **Ernest V. Piazza** has been transferred from Cincinnati to St. Louis; **Charles D. Schmidt** has been assigned to New York; and **A. C. Patsavas** will headquartered in Cincinnati.

New manager of **Materials Handling Sales**, **Pittsburgh Steel Products Company**, is **Thomas L. Griffith**. He will headquartered in the company's general office, Grant Building, Pittsburgh, Pa. **Raymond Cox** was appointed material handling engineer for the Columbus territory, and **Charles Meyer** sales representative of construction products in the Louisville district.



T. L. Griffith
Pittsburgh, Pa. Raymond Cox
was appointed material handling
engineer for the Columbus
territory, and Charles Meyer
sales representative of construction
products in the Louisville district.

WAYNE CRANE



• • • first choice as an industrial
yard crane because it has

Rugged Stability!

"Four-point suspension," exclusive with Wayne Crane, keeps the upperworks level . . . provides maximum stability for operation even on rough ground.

Rated at a full 10-ton capacity, the Model 20's exceptionally short wheelbase and turning radius make it highly maneuverable in the "tight spots."

Before you buy — compare — you'll see why you can't beat the performance of a Wayne Crane!



Also available: 8-ton Model 66 crawler-mounted
12½-ton Model 40 truck-mounted
FREE—Write today for a copy of the new "Handbook of Data for the Proper Selection of Industrial Yard Cranes."

WAYNE CRANE DIVISION

AMERICAN STEEL DREDGE CO. INC. • FORT WAYNE 1, INDIANA

Circle No. 161 on Reader Service Card for more information

Two exclusive sales representatives have been appointed by Lewis-Shepard Products, Inc. **Cay M. Jensen** will represent the manufacturer in the Dallas-Fort Worth area, with offices in Dallas, Texas. The **Roger Brown Company**, located in El Paso, Texas, will cover that section of the state. Both firms have complete sales and service facilities.

(Continued on page 176)



**THIS BAKER *gas-O-matic* UNLOADS
64,000 POUNDS
OF RAW MATERIALS PER HOUR**

- Cincinnati Chemical Works, Norwood Plant, unloads incoming raw materials from highway trailers or boxcars in the plant yard. Yard size limitations make speed essential since carriers often arrive at very short intervals. A former yard crew of ten men with hand trucks couldn't do the job fast enough, nor could three small battery-powered fork trucks installed several years ago.

The Baker 4,000 lb. Gas-O-Matic provides the speed and capacity to solve the problem. Materials in bags or drums are palletized inside trailers or boxcars, and carried in double-pallet loads to a warehouse elevator. Now two 16-ton full trailer loads arriving at the same time can be unloaded and material warehoused in 60 minutes. The electric trucks now work inside the building, and manpower saved was applied elsewhere.

The Gas-O-Matic also loads interplant trailers and does many other handling jobs, some of them involving a 280 ft., 10% ramp which the loaded truck ascends with ease. A second Gas-O-Matic at the nearby St. Bernard plant of Cincinnati Chemical performs similar tasks . . . In the six months that these trucks have been in service they have had no down time and no maintenance other than routine engine adjustment. They consume only about one gallon of gas for two hours work. Let a Baker representative show what Gas-O-Matic can do for you, or write The Baker-Raulang Company, 1219 West 80th St., Cleveland 2, Ohio and ask for Bulletin 1344.

Baker
industrial trucks

Circle No. 21 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

What's New

in Equipment

Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.

Quick-Action Hoist

A light service, quick action wire rope type hoist, known as the Lift About-Jr., is offered by Shepard Niles Crane & Hoist Corporation. Designed for intermittent duty, it is available in $\frac{1}{4}$ to 1 ton capacities, with either an AC or DC motor, and is furnished either parallel or cross mounted, with bolt, hook or trolley suspension. Speed ranges from 12 to 25 fpm on DC operated types and 20 to 37 fpm on AC operated unit, with lifting heights from 12 to 20 feet. Hoists may be equipped for either push button or rope operation.

Circle No. 196 on Reader Service Card for more information

Industrial T.V. Cuts Costs

The "UtiliVue" 400, manufactured by Diamond Power Specialty Corporation, is said to cut costs, improve operation, save manpower and promote safety. The unit is a closed-circuit television camera, completely self-contained. The picture can be viewed on standard TV receiver, and can be tuned to any channel from 2 to 6. Camera will feed multiple receiver or monitor points, for maximum flexibility.

Circle No. 197 on Reader Service Card for more information

"Y" Flipswitch Speeds Movement

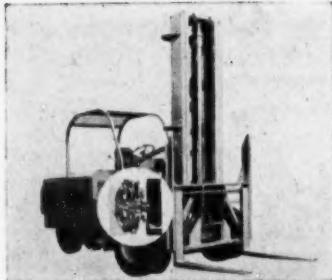
Production of a new gravity roller "Y" Flipswitch for use with gravity wheel or roller conveyors, is announced by Speedways Conveyors, Inc. The flipswitch is completely portable—light and easy to move to any point for speedier loading, moving and unloading. Made with steel ball bearing rollers, it consists of two 45 degree curves in the form of a "Y". The simple flipping of a manual switch moves material either left or right. The unit is available in 12, 15 or 18 inch widths, and can be made to provide 90 degree turns by the addition of two additional standard curves.

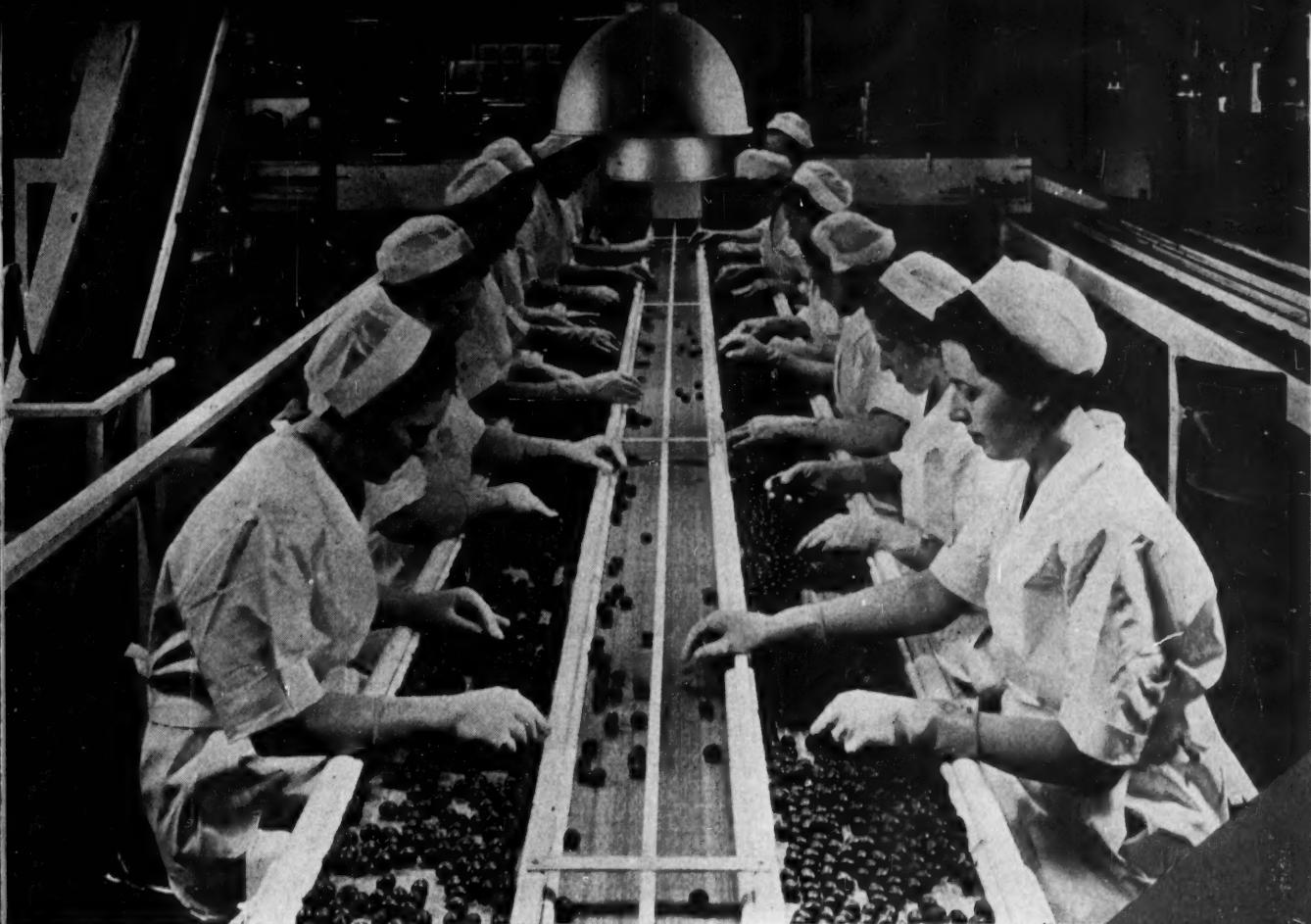
Circle No. 198 on Reader Service Card for more information

Heavy-Duty Torque Converter

Hydraulic torque converter drive is available on all long wheel-base fork trucks manufactured by Gerlinger Carrier Company. Capacities of the trucks range from 12,000 to 22,000 pounds. The torque converter drive is said to: reduce clutch wear to absolute minimum; protect entire drive system by uniform power flow; provide maximum power and torque for starting without clutch slipping; prevent stalling on grades or luging of engine at low speeds.

Circle No. 199 on Reader Service Card for more information



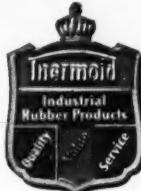


LINDSAY RIPE OLIVE COMPANY, LINDSAY, CAL.

Thermoid Conveyor Belting cuts handling costs on many types of jobs

There's a Thermoid Conveyor Belt designed to lower handling costs in every type of plant. Each belt is best suited for the particular type of service recommended. Take food processing for example: **CANNERS** (WC & PC)—For handling vegetables, fruit and other foods. Resists acids. Imparts no taste or odor. Available in white or peach color covers. **CANNERS C**—Ideal for use where food is not in direct contact with belt. For packages, waste and refuse; **RUFFTOP**—Thousands of irregular gripper points guide smooth surfaced articles up inclines to 35°.

These belts cut costs in the food industry. But no matter what you handle Thermoid Conveyor Belting will cut your costs... stay on the job longer... reduce down time. Your Thermoid Distributor can help you select the Conveyor Belt best suited for your requirements. If you prefer, write direct for Catalog 3679.



Canners
Type WC—white
Type PC—peach

Canners
Type C—black

Rufftop

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

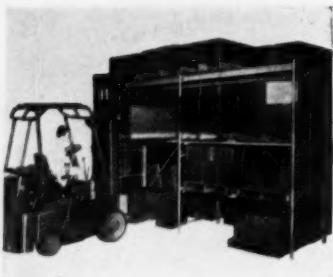
thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

WHAT'S NEW IN EQUIPMENT

Continued



Increases Storage Space

A simple type of pallet-rack system, which increases storage space at little additional cost, is announced by Brainard Steel Division of Sharon Steel Corporation. The system is built around one basic part: a unique tubular steel frame. Shelving bars and connectors provide a slip-fit connection between frames. No cutting or fitting of parts is required. Racks can be erected two, three or four pallets high, and extended indefinitely in length. Each section is independently adjustable. All types of pallet requirements can be met with various arrangements of the basic sections.

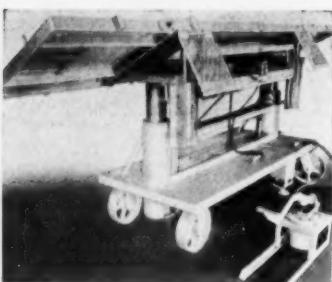
Circle No. 200 on Reader Service Card for more information



Quickly-Installed Power

The newest in The Ready-Power Company's full line of gas-electric and diesel-electric power units is model HA-3. Specially designed for quick installation on 2000 to 5000 pound sit-down-type electric trucks without need for seat alteration, the unit incorporates several new design features. The instrument panel is located within easy reach and view of the operator, and fully protected against damage. The newly developed hinged cover and side plate permits quick and easy access to the engine. Ready-Power units are interchangeable.

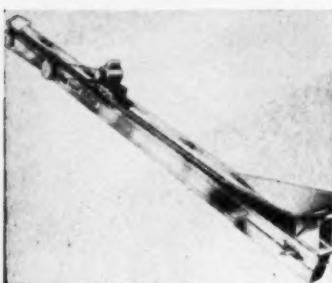
Circle No. 201 on Reader Service Card for more information



Fast, Accurate Stock Feeding

Newly designed for fast, accurate stock feeding into an inclinable bed press is Rack Hydraulic Equipment Corporation's 3-ton capacity hydraulic sheet feeding table. The unit has a hydraulically activated tilt top and built-in safety guards. Of all-welded construction, the table is operated by a two-speed foot pump. A two-way valve controls both the tilt and straight elevation of the table. Ten-inch heavy-duty steel casters with roller bearing hubs provide easy movement with heavy loads.

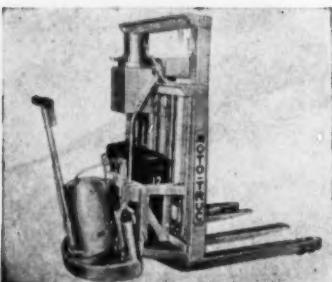
Circle No. 202 on Reader Service Card for more information



Lightweight Bulk Conveyor

The Belt Handy-Handler Model 600, designed by Belt Corporation, replaces the Model S unit. It is a lightweight bulk conveyor, offered with either a rubber belt or steel chain and plow-contour rubber flights. Specially designed to load and unload trucks and cars with bulk materials, it will handle bones, sawdust, wetting agents, peat and many other non-abrasive materials. Test runs have shown capacities as high as 24 tons of coal per hour. All-bolted construction throughout simplifies replacement of parts worn through long use.

Circle No. 203 on Reader Service Card for more information



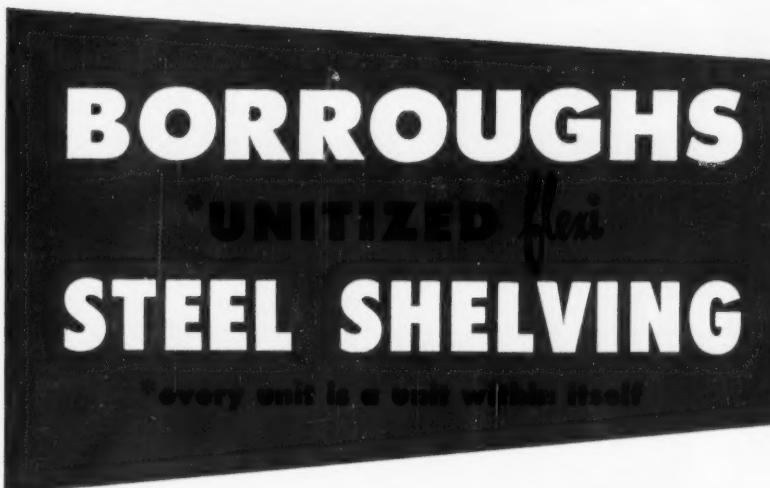
Outrigger "Hang-Up" Eliminated

The "Jack Knife" action feature of The Moto-Truc Company's Hi-Lift stacker, increases the operational range of the standard outrigger machine. This feature eliminates the "hang-up" often caused on ramps or slight inclines. The truck frame is raised, by means of a hydraulic pump and ram unit, to give sufficient clearance. The "Jack Knife" action is optional on the complete line of Moto-Truc Hi-Lift stackers, and may be installed on trucks presently in operation.

Circle No. 204 on Reader Service Card for more information

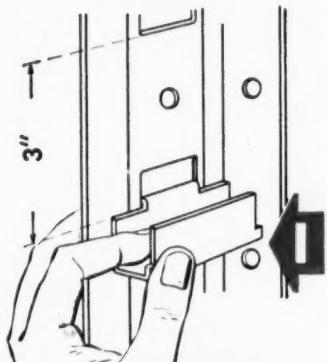
(Continued on page 180)

you can pay more but you can't get more for your money



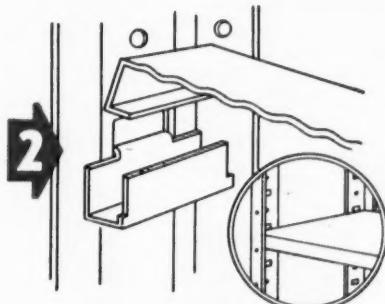
Here's the most original, practical and economical steel shelving on the market! ... the last word in new features, simplicity and value! Each individual unit is complete in itself. No part depends on unit next to it. Any unit, or shelves, can be moved independently. New Borroughs shaped post for open shelving gives added strength. New Borroughs 1-piece closed uprights for closed shelving require no bolts...only 1 piece to handle. **SEND FOR CATALOG** and let us tell you more!

1-2-here's all you do to assemble shelves



Insert SHELF SUPPORT BRACKET

—no fumbling with studs, bolts, nuts or lock washers.



Tilt Shelf into SUPPORT BRACKET

—and you're finished...shelf is now ready for loading.

send for Catalog



Saves erection time!

Fewer parts—no dilly-dallying with bolts, nuts and tricky tools.



Saves time rearranging shelves!

No lost motion...you can change shelves in rapid-fire order.



Has added strength!

New Borroughs shaped post gives extra strength...extra value.



Saves money!

Less installation cost — no wasted air space—speedily adapted to any shelving storage problem.

BORROUGHS MANUFACTURING COMPANY

A SUBSIDIARY OF THE AMERICAN METAL PRODUCTS COMPANY OF DETROIT

3004 NORTH BURDICK KALAMAZOO, MICHIGAN



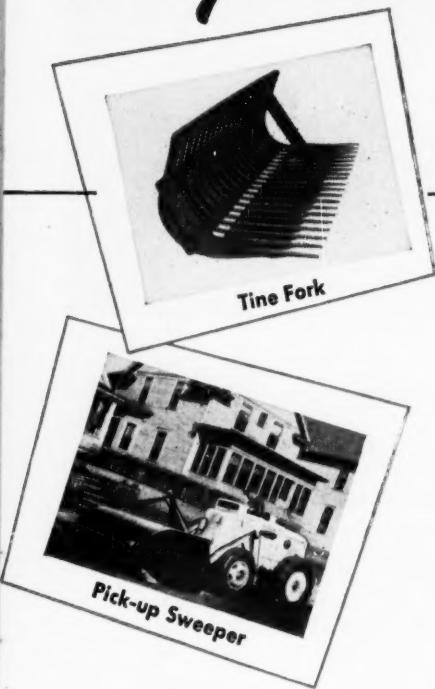
Circle No. 175 on Reader Service Card for more information





attachments

a big PAYLOADER® plus



THE COMPLETE LINE — This literature contains illustrations and specifications on the complete line of "PAYLOADER" tractor shovels, switching tractors and towing tractors. Write for your copy, without obligation.



PAYLOADER®

THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



Circle No. 75 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

"PAYLOADER" tractor shovels can do so many bulk-handling jobs *well*—indoors and outdoors—that thousands of those serving industry represent repeat orders, resulting from the eye-opening performances of initial units.

They dig, load, transport, stockpile and spread loose materials . . . unload boxcars, spot cars, lift, and pull. And there are seven proven models from 12 cu. ft. to 2 cu. yd. bucket capacity to fit your needs.

In addition to standard bucket equipment there's a variety of special buckets and other attachments available for "PAYLOADER" tractor shovels to adapt them for many other special material-handling tasks.

There is a "PAYLOADER" Distributor nearby ready to help you choose the Model and attachments that will best fit your needs. He also has complete parts and service facilities to keep your "PAYLOADER" profitably productive.

Please send information as checked below:

NAME _____

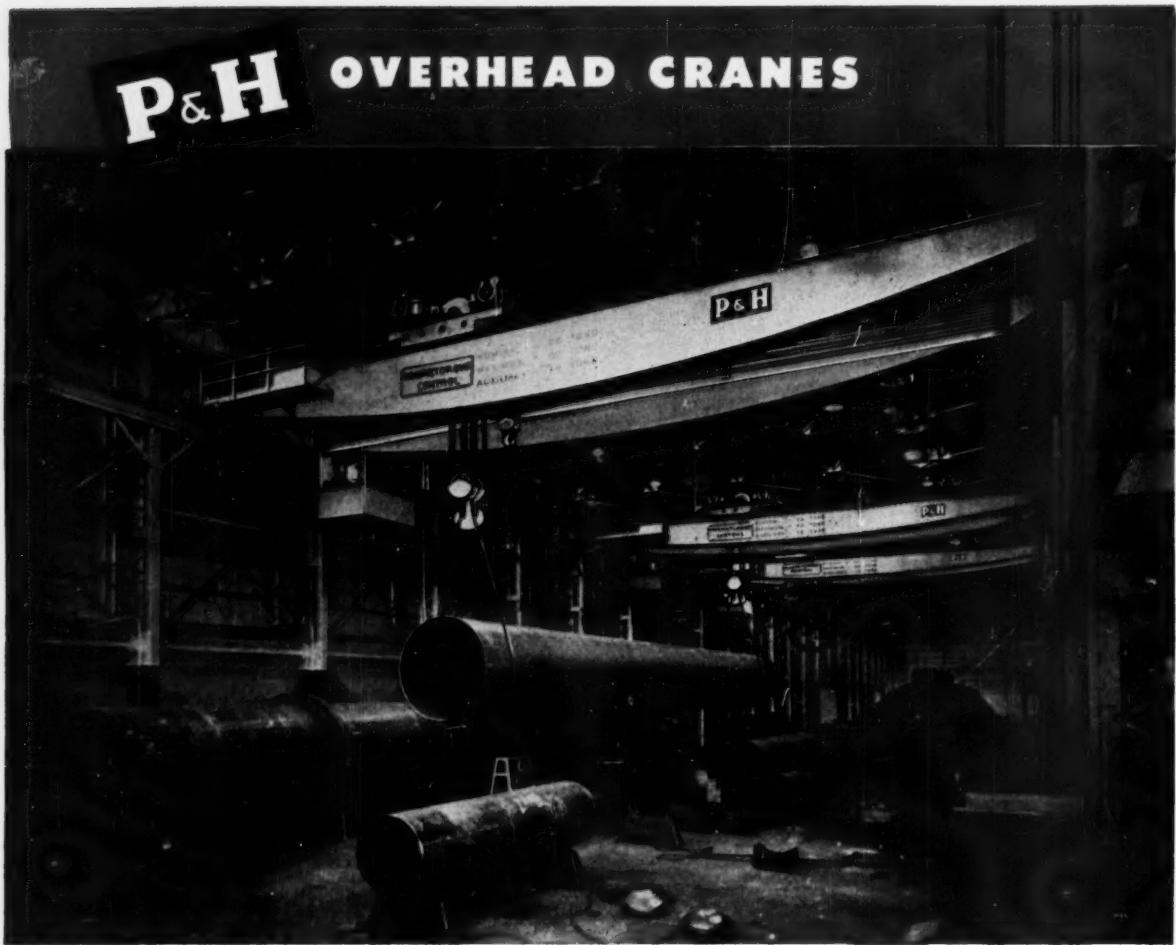
TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

- Have Distributor call
- Send information on all PAYLOADER tractor shovels and tractors
- Send information on PAYLOADER attachments



P&H Magnetorque® (AC crane control)

... Outstandingly Successful
in more than 900 installations

Right from the start, P&H Magnetorque was hailed as one of the most important crane developments in 25 years. And so it has proved to be! Since it was introduced in 1947, more than 900 Magnetorque installations have been put on P&H Cranes. *And every single one is successful!*

Magnetorque AC Crane Control, developed and perfected by P&H, gives you the finest control ever devised with the

economy and convenience of AC power. It gives you better performance — *proved performance!* And far lower maintenance costs. Remember, P&H electrical equipment is *designed and built* for crane service — *not adapted for it!*

If plant expansion or modernization is in your program, review your crane problems with P&H at the earliest planning stages.

P&H OVERHEAD CRANE DIVISION

HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN



Just off the press
— a new 24-page
bulletin on
Industrial Cranes.
Ask for Bulletin C6-3.



Circle No. 188 on Reader Service Card for more information

NOW—

AN END TO HARMFUL EXHAUST FUMES FROM YOUR GASOLINE-POWERED EQUIPMENT!

OCM CATALYTIC EXHAUST

**Eliminates Deadly Carbon Monoxide and Hydrocarbons
From Any Gasoline Engine**

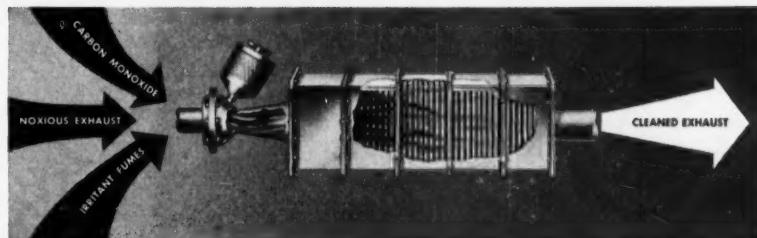
THE OCM Catalytic Exhaust is the most important safety development in exhaust fume control since the gasoline engine was invented. If you're using or planning to use lift trucks, tow trucks, loaders or similar equipment indoors, it's a development of direct importance to you.

Now, with the OCM Exhaust, you can run any type of gasoline-powered equipment in even closely confined areas safely, without fear of noxious exhausts. And without the cost of additional ventilation systems.

By catalytic reaction, the OCM Exhaust eliminates 95% or more of the deadly carbon monoxide and 90% of the hydrocarbons from the exhaust of any gasoline engine. Connected to the engine exhaust manifold, the OCM effectively oxidizes harmful, foul-smelling fumes and odors before they reach the air you breathe. For your employees this means better and safer working conditions. For you it means more efficient use of your gasoline-powered equipment, plus all the advantages of higher employee productivity and morale.

SIMPLY REPLACES YOUR PRESENT MUFFLER

The OCM Catalytic Exhaust is designed to replace the standard gasoline engine muffler. It is now available as



OCM Catalytic Exhaust cutaway to show catalytic units. These units give up to 2000-2500 hours of service—can then be quickly and economically replaced. Tested and listed by Underwriters Laboratories. Non-leaded gasoline must be used with the OCM Catalytic Exhaust.

original equipment from such leading manufacturers as:

Automatic Transportation Co.
The Buda Company
Clark Equipment Co.
Lamson Mobilift Corp.
Lincoln-Schlüter Floor-Machinery Co.
Parker Sweeper Co.
Transitier Truck Co.
Yale & Towne Mfg. Co.

It can also be fitted quickly and easily to your present engines by your own mechanics.

The OCM Catalytic Exhaust is a proven success, and is now being used by some of the nation's leading companies. Wherever you operate gasoline-powered equipment indoors—even part time—you have a real, a critical need for the OCM Catalytic Exhaust. Write now for complete information and name of your supplier.

NEW OCM DIESELER KILLS DIESEL EXHAUST FUMES

A tremendously important development for diesel equipment, the new OCM Dieseler reduces *below objectionable levels* the noxious exhausts from any 4-cycle diesel engine. By catalytic reaction, the Dieseler eliminates 60-85% of the harmful, unpleasant fumes and odors—80-90% of the dangerous carbon monoxide—whenever your engine is operating at or over 60% load. The OCM Dieseler can give you important advantages: in cleaner, safer air, in more efficient performance, in better employee morale. Write now.

NOTE. Dealerships for both OCM Ex-
hausts are now available in most major
markets. Write for full details.



OXY-CATALYST, INC.

WAYNE, PENNA., U.S.A.

MANUFACTURING • ENGINEERING • RESEARCH

Fume elimination processes and equipment for internal combustion engines—for incinerators—for consumer products—and for industrial air pollution control and heat recovery

Inquiries outside the U.S., U.S. territories, and Canada contact:
Pan American Chemical Inc., 9 Rue La Ferouse, Paris 16, France

Circle No. 121 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

OXY-CATALYST, INC., Wayne, Pa.

Send complete information on

- OCM Catalytic Exhaust for gasoline engines;
 OCM Dieseler for 4-cycle diesel engines.
 I am interested in a dealership.

Name _____

Title _____

Firm _____

Street _____

City _____ Zone _____ State _____

Announcing a New 15-Ton Crane for Industry



Here's big news for materials handling men—the popular Model 15-B crane-excavator is now available with its own rubber-tired carrier. You can now get all the time-and-money saving advantages of a fast moving yard crane with 15-ton capacity, plus the ruggedness and dependability of the field proven crawler-mounted 15-B.

Built exclusively for Bucyrus-Erie Transit Crane duty, the crane carrier has ten speeds forward and two reverse—maximum travel speed of 31 m.p.h. The chassis frame, of welded alloy steel construction, provides a solid foundation for fast operation. Two extendible I-beam type double box outriggers on each side furnish additional support.

The upper works and machinery arrangement is of proven design, basically the same as the

15-B crawler-mounted machine. The revolving frame is a one-piece welded unit of deep box-section design. Conical hook swing rollers—two pairs at the front where the heaviest loads are concentrated, and two single rollers at the rear—give free-running operation that increases ease of swing. Each pair of the front rollers operates in an equalizing frame which distributes loads evenly.

Look over this partial list of important features that make the new 15-B Transit Crane outstanding for fast profitable handling of scattered, diversified materials handling jobs. Then get complete details from your nearby Bucyrus-Erie distributor.

32E54C

check these 15-B Transit Crane Features

- Power controlled boom hoist, fully independent of all other functions, provides high accuracy boom control for crane work.

- Friction swing brake, in addition to regular swing lock, permits more boom point over desired position.

- Safety boom stops, designed to prevent boom from accidentally snapping over center and striking cab, furnished on lifting cranes.

or convertible in the field to ½-yd. clamshell, dredging, shovel or drop shovel.

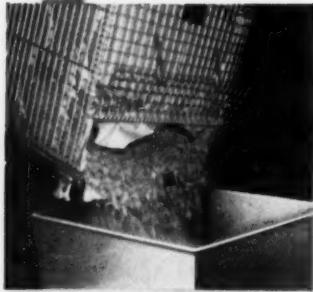
- Standard 30-ft. crane boom is extendible to 70 feet with insert sections. Jib extensions can be added without removing sheaves, guards, or suspension ropes.

- Pendant type boom suspension (8- or 16-part) is ideal for changing boom lengths conveniently.

- Power controlled lowering of load on main hook in lifting crane service.

BUCYRUS-ERIE CO. South Milwaukee, Wis.

Circle No. 176 on Reader Service Card for more information



Another Palletainer first! Equipped with dump type gate and heavy paper liner, Palletainers are proving new economies and convenience for handling loose materials.

• Interested in getting more out of your materials handling dollars? Then send today for your copy of Union Steel's big illustrated Palletainer booklet.

It will quickly and clearly indicate how you can make important savings in materials, time, space and above all . . . man hours!

There are dozens of interestingly different applications that will show you new handling, storing, warehousing, and shipping methods. Also, detailed information on Palletainers exclusive construction features plus complete specifications on the many versatile models available.

The big new USP Palletainer booklet will be sent to you immediately and without obligation. However, should your problem require immediate assistance, our nearest representative will contact at your request.

Gentlemen: Please send me my copy of your big, new USP Palletainer booklet at once.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Please have your nearest Palletainer representative

contact _____



UNION STEEL
PRODUCTS CO.
ALBION, MICH.

Circle No. 154 on Reader Service Card for more information

Calendar of Events

September, 1954

Packaging Association of Canada, Competition and Workshop Seminar, Toronto, Canada

September 7-9

Buda Traveling Road Show, Jacksonville, Florida

September 8-9

Caster & Floor Truck Mfgs. Assn. Plastic Wheels Standards Meeting, New York, N. Y.

September 15-17

Buda Traveling Road Show, Miami, Florida

September 22-24

Material Handling Institute Fall Meeting, Skytop Lodge, Pennsylvania

September 27—October 8

Institute for Packaging Personnel, Purdue University, West Lafayette, Indiana

September 28-30

9th Annual Industrial Packaging & Material Handling Exposition, Coliseum, Chicago, Illinois

October 16-19

Conveyor Equipment Mfgs. Assn. Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

October 18-22

42nd National Safety Congress & Exposition, Chicago, Illinois

October 19-21

Caster & Floor Truck Mfgs. Assn. Meeting, Hollenden Hotel, Cleveland, Ohio

November 1-5

National Metal Show, International Amphitheater, Chicago, Illinois

November 9-11

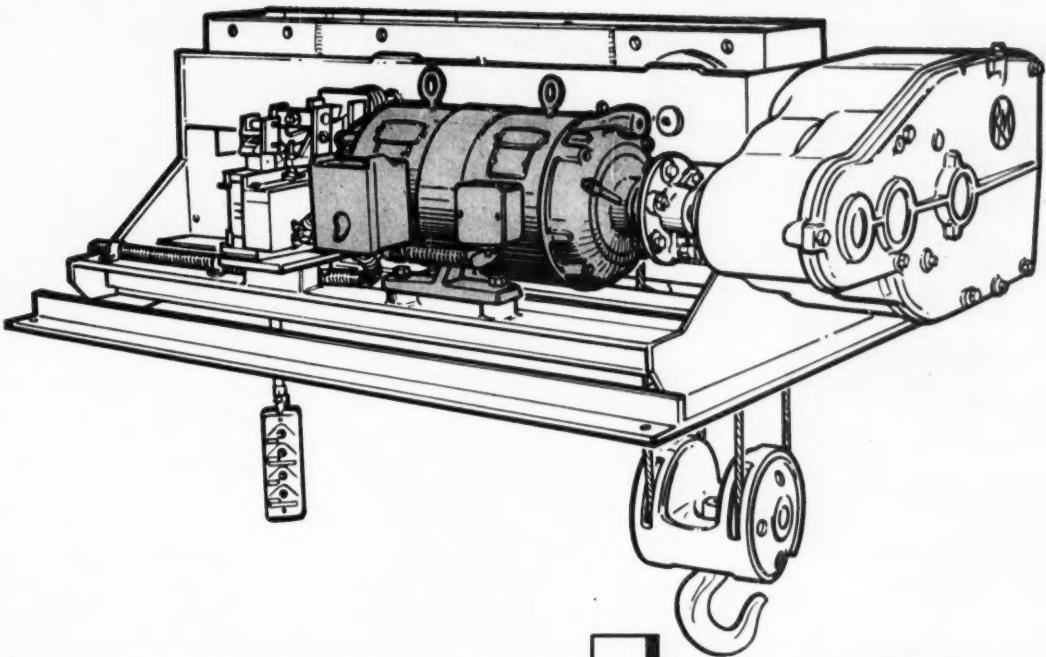
3rd Canadian National Packaging Exposition, CNE Automotive Building, Toronto, Canada

November 10-12

18th Annual Time & Motion Study & Management Clinic, Sherman Hotel, Chicago, Illinois

November 15-17

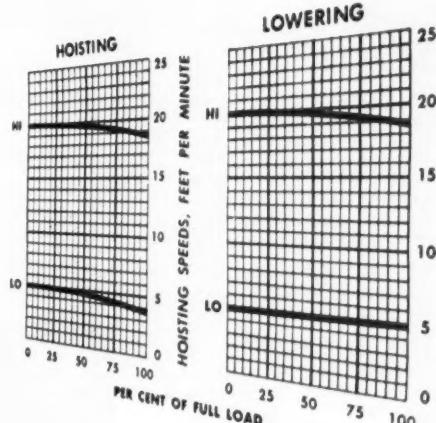
10th Annual Meeting, The Magnesium Association, Hotel Chase, St. Louis, Missouri



mUSCles

ALWAYS UNDER ABSOLUTE CONTROL

You get positive load handling from zero to rated capacity in either speed with Robbins & Myers "Dual-Duty" (two speed) hoists. Twin muscles—one fast, one slow—are embodied in the simple, trouble-free polyphase squirrel cage R&M hoist motors—linked together in a common housing. Three to one, or four to one speed ratios provide fast lift or lower, with slow gentle speed for accurate spotting. Two motors—the extra safety factor that prevents line shutdowns. If one motor should fail, the other would finish the job. And it can too! The graphs tell the story—less than 14% speed variation when handling rated load in low speed! Conventional multi-speed hoists can't touch that record. *Load Capacity:* 1,000 to 20,000 lbs.; *Speeds, low:* 2½ to 13½ f.p.m.; *high:* 10 to 54 f.p.m.; *Controls:* 2 or 4 pushbutton (4 is standard); *Mounting:* Lug or hook—plain, geared or motorized trolleys.



take it up with
ROBBINS & MYERS, INC.

SPRINGFIELD, OHIO

BRANTFORD, ONT.



VENTILATORS



MOYNO PUMPS



HOISTS CRANES



MOTORS



FANS

clip
staple to letterhead
add name & title

Have representative call.

Send D-D hoist bulletin 880.
FLOW

Circle No. 135 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954



RAYMOND

Lightweight Hydraulic HAND PALLET TRUCK

Capacity 2,000 lbs.

- **LIGHTEST WEIGHT** Aluminum alloys reduce weight without sacrificing quality or strength.
- **STRONGEST FORKS** One-piece welded steel construction insures maximum overload safety factor.
- **EASIEST TO OPERATE** Foot pedals lift, lower loads. Easy to pull. Effortless pallet entry. (Patented booster roll construction.)
- **LONGEST SERVICE** Proven under years of use . . . and abuse. Lowest cost in the long run.
- **MOST EFFICIENT PUMP** Backed by over 25 years experience in hydraulic material handling equipment.
- **RUGGED CONSTRUCTION** Ram pistons, axles, lever shafts are heat-treated alloy steel. Reinforced handle.

Mail Coupon!

The RAYMOND CORPORATION

3344 Madison St., Greene, N.Y.

Give me the facts on your Lightweight Hand Pallet Truck . . . send latest bulletin!

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

Circle 183 on Reader Service Card



. . . at Bay City Shovels, Inc.

Donald E. Hawkins has succeeded **Morgan Ramsey** as president. Ramsey retired for health reasons, but will continue to serve on the board of directors. Hawkins, a graduate of Ferris Institute, joined the company in 1928 and was named to the board of directors in 1943. He became secretary and treasurer in 1947. The new appointment covers the dual post of president and treasurer. **Morgan Ramsey, Jr.** will serve as secretary of the organization.



D. E. Hawkins

. . . at Goodyear Tire & Rubber Co.

A 40-year service pin was awarded to **Dr. R. P. Dinsmore**, vice president in charge of research and development, by board chairman **P. W. Litchfield**. Among the pioneering



projects spearheaded by Dr. Dinsmore are Pliofilm, a rubber hydrochloride protective film used as a wrapping in the food industries, and the first rayon cord tire. Earlier this year, he was elected a five-year term member of the M.I.T. Corporation; named president-elect of the American Institute

of Chemists; and elected a director of the American Institute of Chemical Engineers.

. . . at Colson Corp.

Robert A. Pritzker, president of **The Colson Corporation**, has been elected to membership in the Young Presidents' Organization, a national association of executives under 40 years of age who head businesses which have a gross volume of a million dollars or more annually. Pritzker, who is 28, became president of Colson in January of this year.

. . . at Thomas Laughlin Co.

Frederick C. Hitchcock has been appointed vice president. In that position will coordinate the activities of the company's sixteen branch sales offices, and work toward the development of new markets.

. . . at Minnesota Mining & Mfg. Co.

Election of **Kenneth J. Shea** to vice president of sales for the International division was announced by the board of directors. His new responsibilities include general sales administration of all foreign subsidiaries, European export sales and supervision of all international product sales managers.

E. Harlan Church, assistant treasurer of the parent company, was elected treasurer of the International division. **Eugene F. Kindler** will serve as his assistant.

Also announced by the parent company is the appointment of **George J. Wachholz** as controller, and **Harvey J. Livermore** as director of special staff projects relating to manufacturing.

. . . at Caterpillar Tractor Co.

The election of **William Blackie** of Peoria as executive vice president has been announced. In his new capacity,

he will share top administrative responsibilities with president **Harmon E. Eberhard** and executive vice president **A. T. Brown**. Blackie joined the company in 1939 as controller, and has served as chairman of the board of Caterpillar Tractor Co. Ltd. of Coalville, England, and as a member of the board of Trackson Company of Milwaukee. He is a native of Scotland, and came here in 1930.

... at Rheem Manufacturing Co.

Lt. Gen. Albert C. Wedemeyer, Ret., was elected a vice-president and director, following a special meeting of the board of directors in San Francisco. He will assume his new responsibilities September 1, with headquarters in New York. General Wedemeyer has resigned a similar post which he held since 1951 with Avco Manufacturing Corp.

... at Evans Products Company

Vice president **R. B. Evans** has been appointed chairman of the program committee of the Industry Advisory Committee to the Materials Management Center of Wayne University, Detroit. He will also serve as a special lecturer for the courses offered by the school. Early in 1952, the year the Center was established, Evans Products made a \$5000 grant to it.

... at American Box Company

After 50 years of service with the company, **Edward Haske** is receiving the recognition of his achievement and the expressions of gratitude from the manufacturing firm. In celebration of the occasion, a banquet was planned in his honor, at which time he was presented a diamond 50-year service pin and a watch.

(Continued on page 170)

*This is
Boarding House
Reach"*

ONLY THE

RAYMOND

Reach-Fork
MADE BY
HAS IT!

WHAT IT DOES The Raymond Reach-Fork enables you to install 6-ft. aisles in your warehouse right now! For the first time, there's no need for special racks or pallets. Using existing equipment, you can increase storage capacity as much as 50%.

HOW IT WORKS The Reach-Fork operates from the aisle . . . it does not straddle the bottom pallet like other narrow-aisle tiering trucks. Its forks reach right into the storage rack to pick up or deposit your load. Forks reach out a full 24" and back in seconds.

OTHER ADVANTAGES The Raymond Reach-Fork can be used on low-capacity elevators and floors due to its light weight. Ideal for loading motor truck trailers and boxcars too . . . because it stacks pallets closely, elevates 41" without increasing overall height. Equipped with new Raymond Power Unit that opens like a book for fast, easy servicing.

RAYMOND REACH-FORK
Electric Tiering Truck.
Model E2RT. Cap. 2,000 lbs.

ELECTRIC INDUSTRIAL TRUCKS • HYDRAULIC ELEVATING EQUIPMENT

The RAYMOND CORPORATION

3333 Madison St., Greene, N.Y.

- Please send me latest Reach-Fork Bulletin.
 Please have a Raymond representative call.

NAME _____ TITLE _____

COMPANY _____

STREET _____

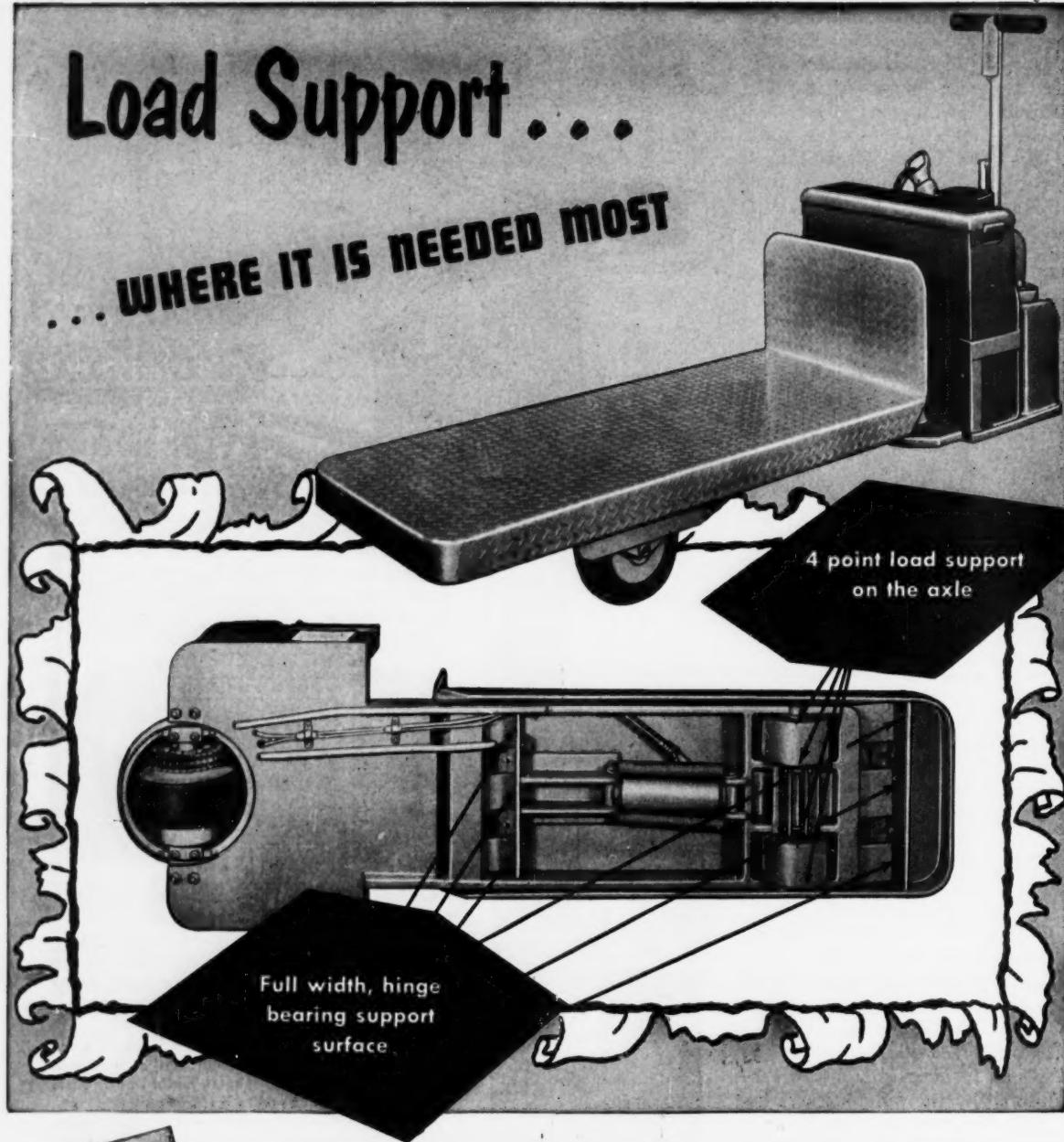
CITY _____ STATE _____

Circle No. 182 on Reader Service Card for more information

SEND
FOR
BULLETIN

Load Support . . .

... WHERE IT IS NEEDED MOST



Platform truck design offers maximum load support and eliminates hinges, pins and bushings. Extra LOAD SUPPORT is only one of the many features found in this model . . . and there is no additional cost for extra LOAD SUPPORT. Trucks are available in capacities up to 10,000 lbs.

Write for Bulletin No. 53 . . . and remember . . . THERE'S A MOTO-TRUC FOR EVERY PURPOSE.



The **MOTO-TRUC Co.**

Representatives in Principal Cities

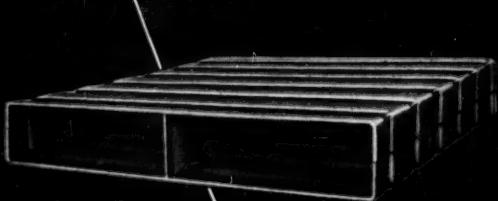
1955 E. 59th St. • Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER
OF "WALKIES"

Circle No. 114 on Reader Service Card for more information

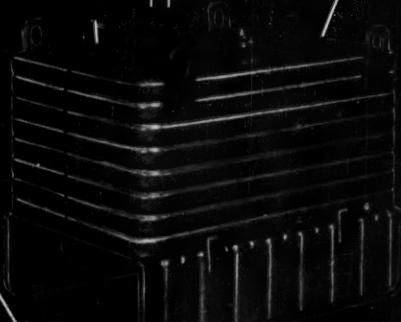
for Pallets...



for Platforms...

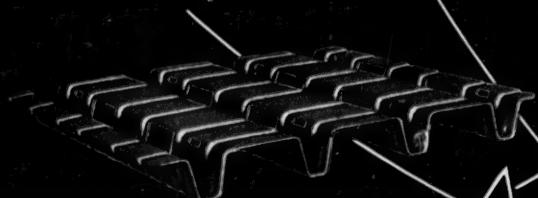


for Hoppers...



for Roll-Overs and Dumps.

for Special Equipment...



for Handling Ideas...

First, Call

POWELL

"The All-Steel Handling Container People"

As originators and oldest producers of all-steel cold formed materials handling equipment, the Powell Pressed Steel Company, naturally, has the widest experience in designing and producing these products. That's why it pays to let your Powell representative know of your handling needs. He is intimately familiar with product handling and the equipment to do the job. He carries nationally accepted products and extends the finest in "after sale" service. And, where handling containers are concerned, he is backed by Powell, leading producer of quality handling equipment since 1920.

THE POWELL PRESSED STEEL CO., HUBBARD, OHIO

ORIGINATORS OF ALL STEEL COLD FORMED MATERIALS HANDLING EQUIPMENT
(IN GREATER YOUNGSTOWN)



LOADING HALF THE TIME... DOUBLE THE EFFICIENCY



WAYNE LOADING DOCK RAMPS

...tilt to meet the load. Hand or industrial lift trucks roll smoothly into truck or trailer from shipping bay.

Just touch the control and the quick-action hydraulic system raises the heavy-duty all-steel ramp to proper height. Leveling fingers anchor it and the throw-over bridge spans the gap between truck and ramp. Cuts hours from shipping time . . . speeds warehousing time and cost . . . leaves more road-time for trucks . . . gets more work done with less effort.

Wayne Ramps are engineered for you: lifting and lowering heights, platform sizes, power units and controls fit your requirements *exactly*. This is all part of Wayne's "LIFTRONICS" — the scientific approach to lift problems that designs Lifts for your job, builds them to fit your plant layout.

Write today for "LIFTRONICS" — data book on complete Wayne line of Industrial Lifts (Loading Dock Ramps and Truck Lifts, Platform Lifts, Cross-over Bridges, Industrial Truck Service Lifts).



THE WAYNE PUMP COMPANY
SALISBURY, MARYLAND

TORONTO, CANADA



Multiple installation of Wayne Dock Lift.

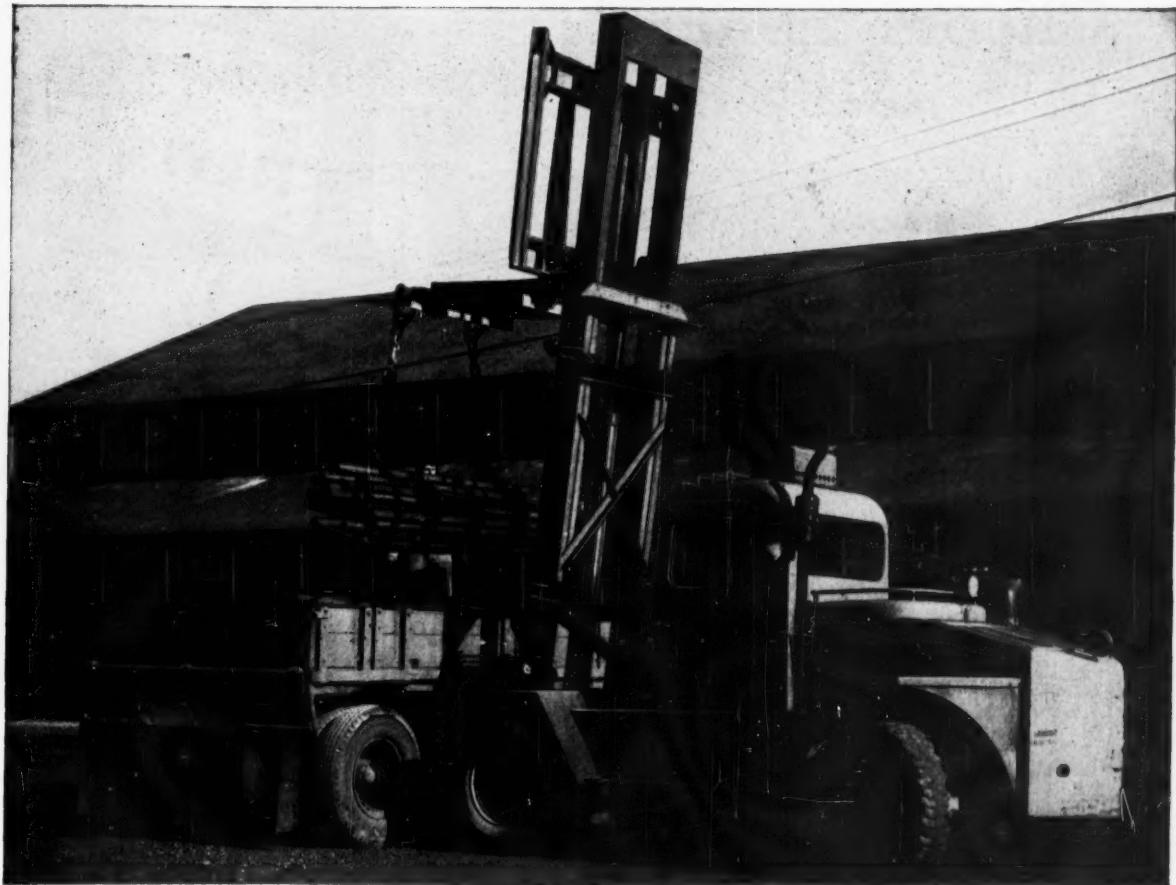


COMPRESSORS

HOSE
REELS

LUBRICANT
DISPENSERS

INDUSTRIAL
PUMPS



**Announcing
the Clark-Ross Y-200**

**Designed specifically
for 20,000 lb. jobs!**

CHECK THESE FEATURES:

Heaviest uprights in the industry: Hi-tensile steel channel specially rolled for this truck.

Shortest turning radius: 15 feet; shorter than any other comparable truck.

3 in. thick steel steer axle.

10 in. underclearance at uprights, plus excellent weight distribution, permit operations under most severe yard conditions.

Safety check-valve built-in: a Clark-Ross exclusive; impossible to drop the load because of line failure.

Planetary gear drive: takes the strain off the axle; all drive components protected.

Extremely easy to service: hydraulic cylinder serviced from bottom, no need to remove uprights; engine and hydraulic system easily accessible.

From the ground up, the Y-200 is a genuine 20,000 lb. truck—not merely a beefed-up truck of less capacity. Pre-production models have been job-tested for nearly a year at steel mills, sawmills and wood treating yard.* These trucks have proved their ability to cut handling costs under the toughest conditions. We are frank to say that we believe the Y-200 will give you better performance, at less cost, than any comparable machine. We invite your comparison: Simply call your local Clark dealer, listed under "Trucks Industrial." Or write us direct. There's no obligation.

*Names supplied on request.

**CLARK
EQUIPMENT**

ROSS CARRIER LINE
Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 13, Michigan

Send details on Y-200

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

Circle No. 179 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

← Circle No. 162 on Reader Service Card

Choose the hoist that fits the job!

Heavy Duty **SHEPARD NILES** Hoist

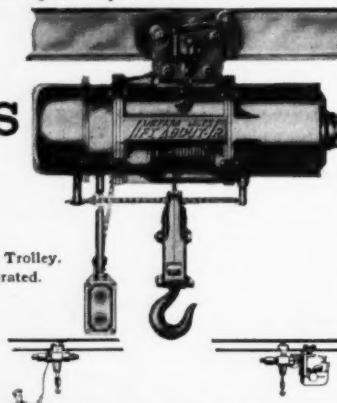
Types: Lug Suspension, Hook Suspension, Base Type, Push Trolley, Geared Trolley, Motor-driven Trolley.
 Controls: Pendant Rope, Push Button, Outrig, Remote.
 Capacities: 500 to 40,000 lbs.
 Speeds: To meet your requirements.



IT PAYS to choose the right hoist for your lifting job . . . the wrong choice can be costly! Let a Sheppard Niles representative guide you in selecting the hoist that best suits your needs. He's a specialist in through-the-air handling . . . knows which model, capacity and controls will be right for your use.

Light Service **SHEPARD NILES** *LIFTABOUT-JR.*

Types: Lug Suspension, Hook Suspension, Push Trolley.
 Controls: Single Speed, Push Button, Rope Operated.
 Capacities: 250, 500, 1000, 2000 lbs.



SHEPARD NILES CRANE AND HOIST CORPORATION

SHEPARD NILES Crane and Hoist Corp.
 2748 Schuyler Ave., Montour Falls, N.Y.
 () Please send me your new *Lift About-Jr. Bulletin*.
 () Please send me your *Shepard Niles Hoist Bulletin*.
 () Have a Shepard Niles representative call on me.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

**SEND
FOR
BULLETINS!**

Circle No. 142 on Reader Service Card for more information



• Attendance reached an all-time high at the Cape Cod meeting of the Caster and Floor Truck Manufacturers' Association, with some 80 persons present. Five new members were accepted into the organization, including, All Steel Welded Truck Company, American Brakebloc Company, Hall & Sons, George M. Prescott Company and Vulcanized Rubber and Plastics Company. A special plastic wheels standards meeting was scheduled for September 8 and 9 in New York, to work out dimensional and quality standards for plastic wheels.

• SIPMHE recently circulated a survey to its entire membership for the purpose of charting its future course of action. The national, regional and chapter levels of SIPMHE were covered, so that members had an opportunity to praise or criticize any project or activity of the Society. The survey brought a 35.5% response, 54% of whom indicated they influenced purchasing. In reviewing the tabulations, president E. B. Candell said: "It is the obligation of every professional group to know its strength as well as its weakness. I consider this survey to our membership to be an investment in the progress of the field we serve."

• In the interest of strengthening the Cleveland Chapter of AMHS, the members recently amended Article IV, Section 1 (a) of the By-Laws to read as follows: "The Management of the Chapter shall be vested in

Look How Easily



"HANDLER"

Handles Loads
up to 4000 pounds



Just one lever does it all...SHIFTS, LIFTS, BRAKES!

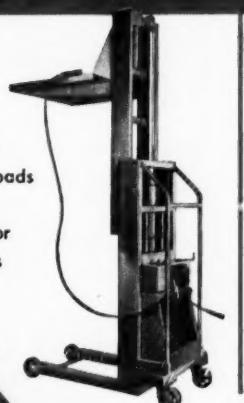
The "Handler" is the first proved-in-service gasoline powered Lift Truck with hydraulic drive and hydraulic control. Just one lever does all the work — selects; speed range (low or high), direction (forward or reverse), load movement (raise or lower), and brakes (re-

turn to neutral applies brakes). Rider has unimpaired visibility at all times — backwards or forwards — and "dead-man" brakes are an important extra safety factor. Six horsepower gasoline engine provides plenty of power for rugged, round-the-clock operation.

Olson Cost-Saving Catalog

The Lifter

Makes quick, easy work of transporting and stacking loads Available in single and telescopic models — hand or power operated. Capacities from 150 to 3000 pounds.

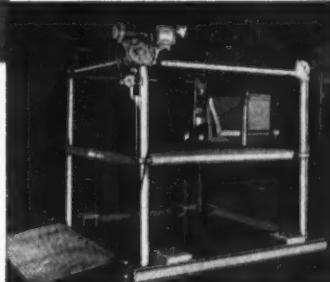


Mail Coupon Today →

THE olson CORPORATION
ELYRIA, OHIO

The Leveler

Industry's leading device for handling loads between levels. May be portable or permanently installed. Capacity 6000 pounds.



The Colson Corporation • Elyria, Ohio

Please send free literature on:

The Handler
The Leveler
The Lifter

please check

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Circle No. 41 on Reader Service Card for more information

S.S.White

PLASTIC CLOSURES

—the inexpensive way
to protect
valuable parts
during shipment

Plain plugs
and caps

Threaded plugs
and caps

Use them to —

Protect threads

Keep out dirt and moisture

Seal in lubrication or hydraulic fluids

S.S.White plastic plugs and caps can save you thousands of dollars in damage complaints and rejections—at the cost of only a few pennies! Use them to cover openings and fittings before shipment. They're quickly and easily applied—and won't shake loose during transit. They're available in both threaded and unthreaded types and in a range of sizes and styles to meet every need.

LET US QUOTE YOU ON YOUR REQUIREMENTS

We can quickly fill your order from stock and are prepared to make up special sizes when required.

GET FULL DETAILS

Bulletins P-5203
and P-5312 have
full information.
Write for free copies.



S.S.WHITE PLASTICS DIVISION
GENERAL MFG. CO.

1000 PARK AVENUE, NEW YORK 17, N.Y.

Circle No. 165 on Reader Service Card

58

ASSOCIATIONS

Continued

a president and an Executive Committee of nine members, a majority of which shall be User Members. Only members of the Chapter in good standing are eligible for these offices." Previously the president and vice president were necessarily elected from the user group. A large attendance is anticipated for the September meeting, scheduled for the Hollenden Hotel.

● **The Canning Machinery and Supplies Association** has moved into new and modern quarters in Washington, D. C. The address is 4630 Montgomery Street, Suite 2, and president E. N. Funkhouser has extended an invitation to members and friends to drop by the new headquarters in the Capital City.

● Vaughn A. Pitzer, controller, The Baker-Raulang Company, has been elected to membership in the Controllers Institute of America. The total membership of the non-profit organization exceeds 4300.

● Forty percent of all industrial executives are reported to be engineers, and sixty percent of engineers are engaged in administrative functions 20 years after graduation, according to a paper presented at the semi-annual meeting of The American Society of Mechanical Engineers. The speaker was J. E. Walters, chairman, Department of Engineering Administration, College of Engineering, Rutgers University. Walters contended that even these high figures could be raised if engineers practiced better engineering administration and applied engineering principles to administrative problems.

a TOUGH dock problem



Loading dock of Wisconsin Packing Co., Milwaukee, Wis.

solved

Lack of space and a 20" height variation of trucks serviced . . . a serious problem for this aggressive meat packing company.

A JOB-ENGINEERED unit solved the problem in short order. Two platforms hinged to the wall, a connecting bridge, an inclined ramp and two dockboards now easily set up to provide ideal loading conditions for any combination of trucks.

All six pieces are made of magnesium—strong, durable and light weight.

Let MPM representatives recommend a cost-saving answer to your loading problems, with job-engineered or standard dockboards.

JOB-ENGINEERED
Design, size and
capacity to fit
your needs.



SERIES F
Full length position lock,
60 models, to 3000 lbs.
capacity.

SERIES T
Low-cost Hand Truck Spec-
ial. 24 models, to 2000
lbs. capacity.

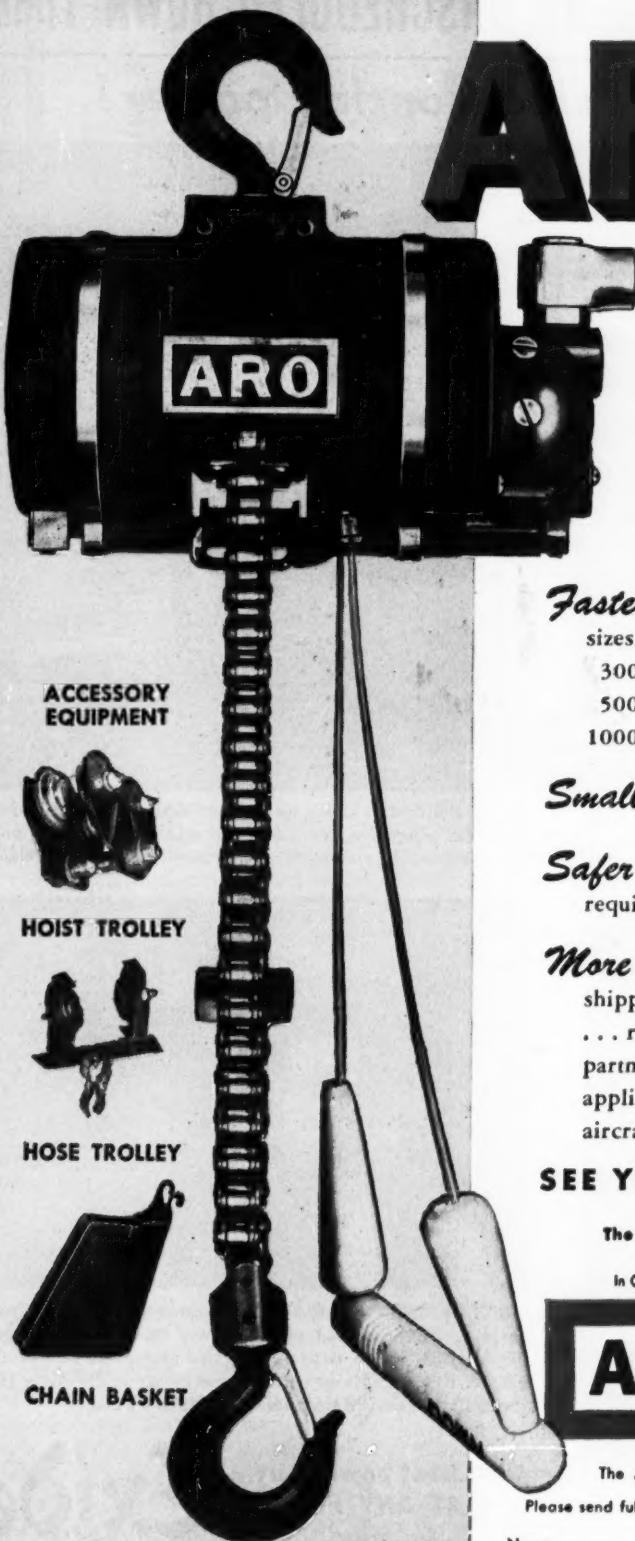


MAGNESIUM
PRODUCTS OF
MILWAUKEE

750 W. Virginia St., Milwaukee 4, Wis.
DESIGNERS AND FABRICATORS

Circle No. 95 on Reader Service Card

FLOW • SEPTEMBER, 1954



ARO

VARIABLE SPEED

AIR HOIST

Faster... Quieter... wide speed range, 3 sizes.

300 lb.—lift rate 75 ft. per min.
500 lb.—60 ft. per min.
1000 lb.—40 ft. per min.

Smaller... one man can easily install.

Safer... no spark hazard... betters all safety requirements.

More Useful... saves time and labor for shipping docks... heat treating departments... refineries, chemical plants and plating departments... machine shops and foundries... appliance, furniture, textile, automobile and aircraft assembly lines... stock rooms.

SEE YOUR ARO DISTRIBUTOR

The Aro Equipment Corporation, Bryan, Ohio

Offices in All Principal Cities

In Canada—Aro Equipment of Canada, Ltd., Toronto, Ont.

ARO

AIR HOIST

Also... Air Tools... Lubricating Equipment... Aircraft Products... Grease Fittings

The Aro Equipment Corporation, Bryan, Ohio

Please send full details on the new ARO Air Hoist, without obligation.

Name _____

Company _____

Street _____

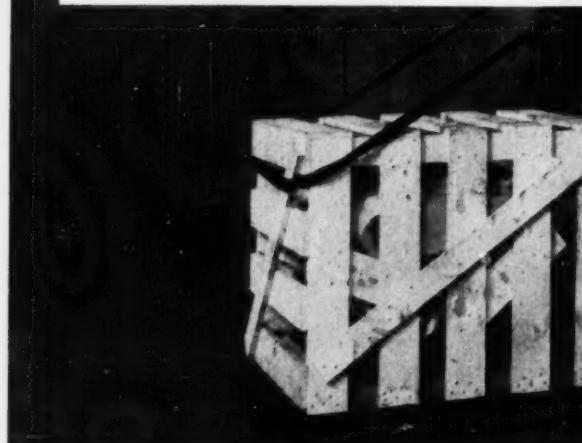
City _____ State _____

Circle No. 14 on Reader Service Card for more information

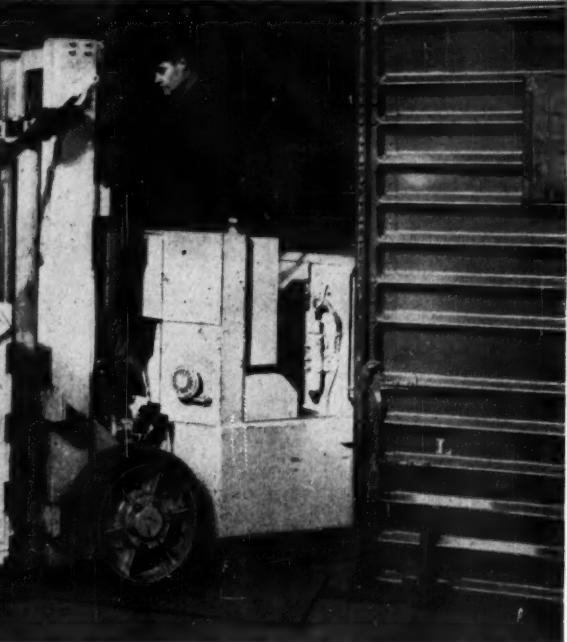
GET FULL SHIFT HANDLING, NO UNSCHEDULED DOWN TIME

... with low cost Exide-Ironclad power!

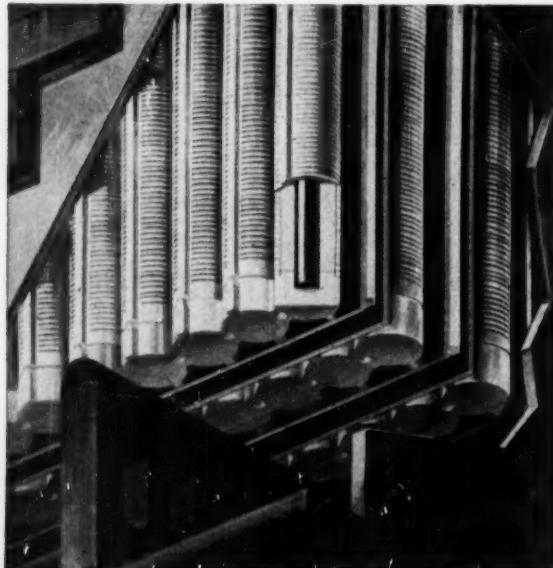
Whether the load is light or heavy, tough or fragile, electric materials-handling trucks, powered with Exide-Ironclad batteries, assure rapid, accurate handling of materials throughout the entire shift.



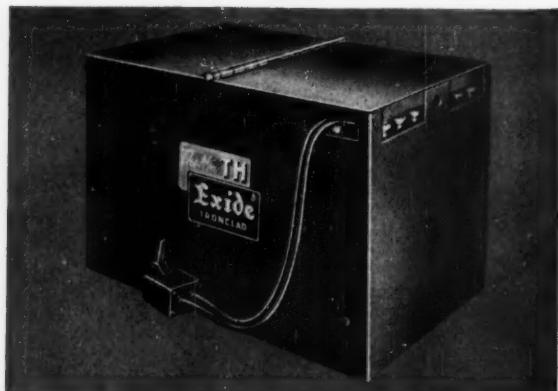
YOU GET uniform performance throughout each shift when battery electric trucks are powered by Exide-Ironclads. Your trucks handle as much load during the last hour as



during the first . . . with no unscheduled down time. Lower costs for operation, maintenance and depreciation make Exide-Ironclads your best power buy—**AT ANY PRICE!**



THE POSITIVE PLATES are the heart of any battery. Only Exide uses a slotted tube construction. By use of tubes, more active material is exposed to the electrolyte, providing greater power. Also, more active material is retained, giving longer working life.



THE NEW THRIFTY HAULER! The improved industrial truck battery. Non-oxidizing plastic power tubes assure longest battery life, more capacity in the same space. For full details, call your Exide sales engineer—write for Form 1982 (Installation and Maintenance of Motive Power).

Your best power buy
... AT ANY PRICE!

Exide®
IRONCLAD® BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

Circle No. 53 on Reader Service Card for more information

Literature

featured in this month's advertisements

Safety-Ease: The Red-Giant lift truck of Revolvator Company is said to have built-in maneuverability, durability and safety.

Circle 133 on Reader Service Card

Custom-Designed: Wire and Iron Products, Inc. tell how Eezy-Stak baskets carry the ball for better parts handling, carrying and storage.

Circle 166 on Reader Service Card

Path to Profit: Materials are said to make no stops or detours when weighed on a Fairbanks-Morse Company conveyor scale, thus assuring faster, errorless handling, resulting in increased profits.

Circle 57 on Reader Service Card

Profitable Move: Harry J. Ferguson Company tells how to move your products in any direction safely, quickly and at low cost on its conveyor. From the beginning of the line to the end of the line, your product is said to get kid glove treatment at speeds you specify.

Circle 61 on Reader Service Card

Unmatched Ability: The Tractor Division of Allis-Chalmers points out the ability of its HD-5G tractor shovel to dig, load fast, maneuver, handle any load and work anywhere anytime. The company claims the unit is unequalled in versatility and flexibility; can save you time and labor.

Circle 4 on Reader Service Card

Straight Talk: Facts about gas trucks manufactured by The Yale & Towne Manufacturing Company are listed for the engineer and operating man. Exclusive and desirable features that add to the safety, economy and efficiency of the trucks are highlighted.

Circle 170 on Reader Service Card

Year 'Round Protection: Dock covers which provide protection at all times and through all seasons are featured by the manufacturer, Capco. The covers completely enclose the space between car and building doorways. Fifty-one different models are available.

Circle 35 on Reader Service Card

Valuable Mobility: An endorsement of the Krane Kar of Silent Hoist & Crane Company is made by a user in Brooklyn, N.Y. The firm says the unit maneuvers easily, handles loads fast and places them accurately. Use of the truck has cut this company's material handling costs 50 percent. Bulletin 79B gives details.

Circle 144 on Reader Service Card

Everything Rides: Full information is offered by Victor Balata & Textile Belting Company on its belting products. The conveyor is said to be specially engineered for everything from bread to brick.

Circle 160 on Reader Service Card

Safe Shipments: The Union Pacific supplies its shippers with cars equipped with Evans Products Company's DF load securing device at no extra cost. A new loading manual for shippers and railroads is available from this company for the asking. Should help cut your costs, too.

Circle 56 on Reader Service Card

Five Way Reduction: Costs have been cut five ways by The Midvale Company of Philadelphia, since the installation of Baldwin-Lima-Hamilton Corporation's Type 34-W crane. Specific details are available to interested parties.

Circle 22 on Reader Service Card

On The Job: If you like the simplicity, economy and full power of gas-electric or diesel-electric drive and the idea of engine tune-up without truck downtime, The Ready-Power Company has the answer for you. Its units may be installed or removed from trucks in minutes, thus letting your truck stay on the job at all times, as required.

Circle 131 on Reader Service Card

More Pay Load: Brooks Equipment & Mfg. Co. is featuring its Load Lugger truck which is said to carry more pay load than any comparable equipment. The unit picks up, hauls, dumps and puts down, and anyone can operate it.

Circle 177 on Reader Service Card

AD LITERATURE

Continued

Inexpensive Protection: Plastic closures manufactured by The S. S. White Dental Mfg. Co., Plastics Division, protect valuable parts during shipment, and inexpensively, too, says this manufacturer. Bulletins P-5203 and P-5312 give full information.

Circle 165 on Reader Service Card

Cuts Waste Motion: Two-way radio permits drivers to get started on new assignments at a moment's notice at the 46-acre plant of Rohm & Haas in Pennsylvania. Details of this company's experience with mobile radio are outlined by the Radio Corporation of America.

Circle 129 on Reader Service Card

Drum Handling: An attachment for handling drums

which is simple, automatic and moves or tiers drums quickly without pallets is called the Lift-O-Matic and is manufactured by Marvel Industries, Inc.

Circle 178 on Reader Service Card

Bigger Loads: Clark Equipment Company tells how to save more money by handling bigger loads. Featured is the company's 26,000 pound standard lift truck.

Circle 40 on Reader Service Card

Quick Action: Instantaneous and automatic dumping of steel box and skid units is featured by Republic Steel Corporation, Pressed Steel Division. Designed for efficiency and economy, the units can be used to handle light or heavy material—wet or dry—hot or cold.

Circle 132 on Reader Service Card

Everyone Can Count: The Veeder-Root hand tally counts anything you see and gives you an automatic total. Manufactured by Veeder-Root Incorporated, the counters are made for manual, mechanical and electrical operation.

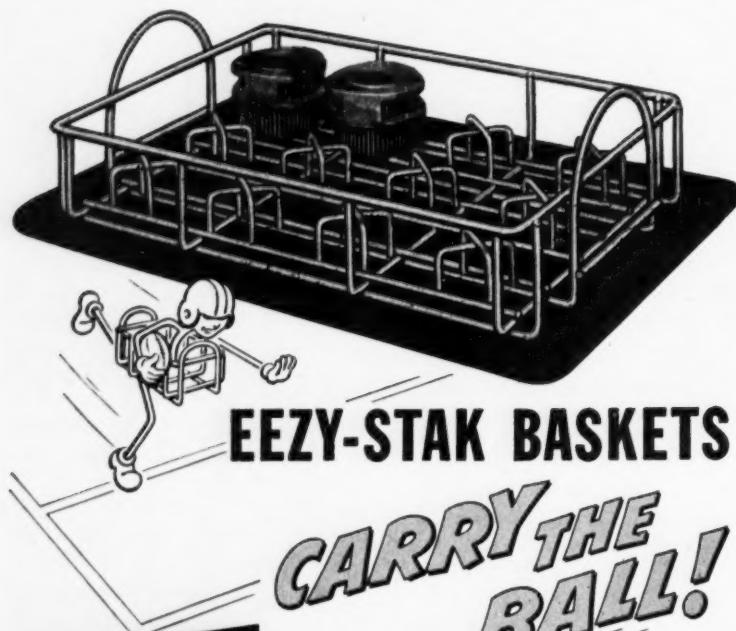
Circle 159 on Reader Service Card

Load Support: Bulletin 53 from The Moto-Truc Company tells about load 4 point load support on the axle. Platform truck design eliminates hinges, pins and bushings.

Circle 114 on Reader Service Card

\$50,000 Saved: By mechanizing its material handling system a firm in California speeded and simplified dried fruit handling, achieved fuller use of its in-plant air-rights, and improved plant housekeeping. The system saves the company \$50,000 annually, and is built around equipment manufactured by Mercury Manufacturing Company.

Circle 104 on Reader Service Card



FOR BETTER PARTS HANDLING, CARRYING, AND STORAGE

WIPCO designs and manufactures baskets for handling everything from cigarette lighters to automatic transmissions! Both stacking (Eezy-Stak) and non-stacking baskets are *Custom-Designed* by WIPCO to your specifications. Eezy-Staks are of all-welded construction with extra frame-reinforcements, and feature the exclusive Interlock Handle* which permits easy and safe stacking.

WIPCO *Custom-Designed* non-stacking baskets are perfect for dipping, pickling, conveying, draining, storage, and numerous other parts-handling operations. They can be built with galvanized or stainless steel, copper, bronze, aluminum, or any other metal, or easily coated with rubber or plastic. Tell us your parts-handling problem. Let a WIPCO engineer find the right solution! Write today for Bulletin No. B-54.

STANDARD EEEZY-STAK BASKETS
FIT THE REQUIREMENTS OF MOST
PARTS-HANDLING JOBS. OVERALL
DIMENSIONS: 21 $\frac{1}{2}$ " X 13 $\frac{1}{2}$ " X 6".
AVAILABLE IN EITHER $\frac{1}{4}$ " OR $\frac{1}{2}$ "
MESH.

*Pat. No. 2646186

IF YOUR GOAL IS BETTER
PARTS-HANDLING, INSIST
ON WIPCO BASKETS



WIRE AND IRON PRODUCTS, INC.

1720 Sixteenth St. • Detroit 16, Michigan

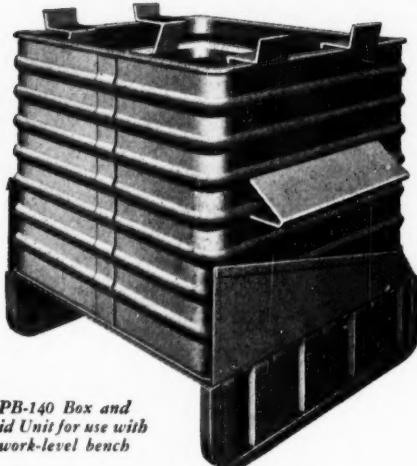
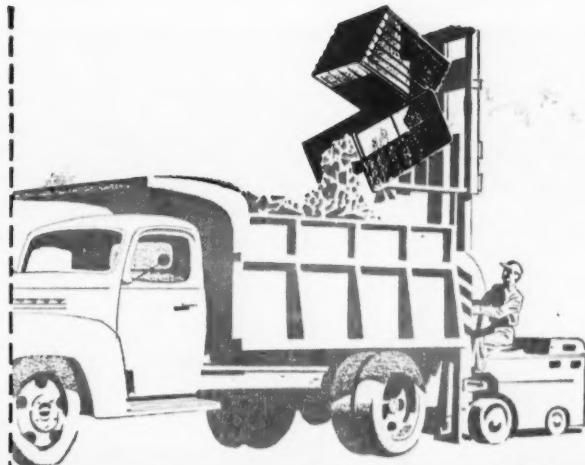
Baskets of all types for

MACHINING • WASHING • DRYING • PLATING • ASSEMBLY • STORAGE

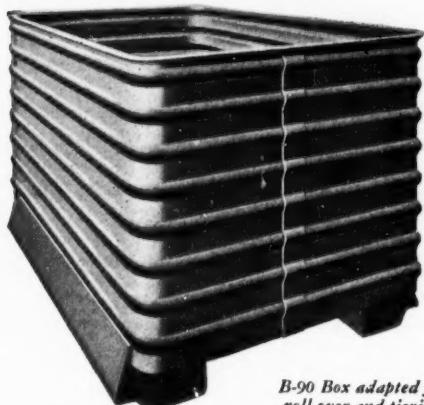
Circle No. 166 on Reader Service Card for more information



PB-125 Dump Type
Box and Skid Unit



PB-140 Box and
Skid Unit for use with
work-level bench



B-90 Box adapted for
roll-over and tiering

REPUBLIC
MATERIALS HANDLING EQUIPMENT



REPUBLIC STEEL BOX AND SKID UNITS FOR ROLL-OVER AND DUMPING

Illustrated above is a PB-125 Dump Type Box and Skid Unit. The box dumps instantaneously and automatically. Top rings on the box engage over truck hooks as truck bed is elevated. When truck bed is lowered, the box is automatically unloaded. This unit can be equipped with lugs for tiering.

Republic Box and Skid Units for roll-over and dumping are designed for real efficiency and economy. They are built for easy one-man operation. Use them to handle light or heavy material—wet or dry—hot or cold.

These units are manufactured in a wide range of sizes to meet your individual requirements. Republic Boxes and Skids are fabricated from heavy gage steel sheets with deep reinforcing ribs for maximum strength and rigidity.

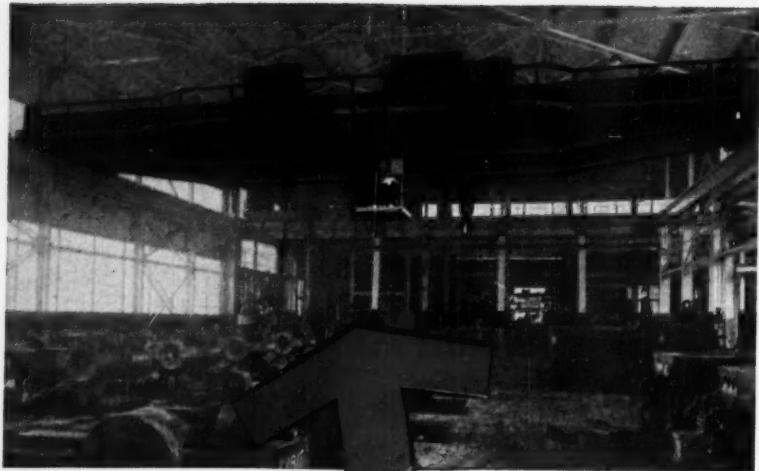
Republic Materials Handling Engineers will be happy to work with you in designing boxes and skids to meet your specific requirements. There is no cost or obligation for their service.

For more information on the complete line of Republic Materials Handling Equipment, write for our new Catalog No. 620.

REPUBLIC STEEL CORPORATION
Pressed Steel Division

6202 Truscon Avenue, Cleveland 27, Ohio

GENERAL OFFICES • **CLEVELAND 1, OHIO**
Export Department: Chrysler Building, New York 17, New York



WHY WAIT MONTHS FOR YOUR NEXT CRANE

For too many years, crane builders have made every order a "production". Weeks of extra engineering, custom built parts, and endless delivery delays have been standard fare for the buyer.

Fortunately, MICHIGAN CRANE is young enough not to have pet prejudices and experienced enough to produce excellent cranes at competitive prices and in a spectacularly short time.

For example, many plants have low clearances between the top of the crane runway and the lowest roof obstruction—which calls for a "low headroom" crane. Most manufacturers call in a troop of engineers for the job. But, because all Michigan cranes are designed for minimum headroom, chances are one of our standard models will fit—saving you weeks of waiting and considerable expense.

Give us a chance to prove it; write for Bulletin 154 to Michigan Crane & Conveyor Co., 116 N. McKinstry Avenue, Detroit 9, Michigan.

MICHIGAN

Crane & Conveyor Company

Circle No. 107 on Reader Service Card for more information

AD LITERATURE

Continued

Modern Handling: Lower total cost, better stacking, faster assembly and reduced weight are pointed out as advantages of wirebound boxes by the Wirebound Box Manufacturers Association.

Circle 167 on Reader Service Card

Lower Handling Costs: No capital investment is required to lease a fork truck from Towmotor Corporation. You can simply replace old handling methods and get lower handling costs from this truck manufacturer. Details supplied on request.

Circle 151 on Reader Service Card

First Choice: Wayne Crane Division of American Steel Dredge Co. Inc. says its equipment is the number one industrial yard crane because of its rugged stability. It further points out that its exclusive "four-point suspension" keeps the upperworks level and provides maximum stability for operation even on rough ground.

Circle 161 on Reader Service Card

Automatic Grabs: Featured by Mansaver Industries are its fully automatic rack grabs for handling coils. The firm manufactures both the manual and motor driven styles of grabs to handle racks and pans of various sizes.

Circle 97 on Reader Service Card

Ruggedly Built: Thomas Truck & Caster Company can produce the trailers you need in capacities up to 60 tons. Built on a rugged, structural steel channel frame, having three or more lengthwise members, the trailers are topped with decks of heavy steel plate. Rubber tired or steel wheels may be furnished.

Circle 150 on Reader Service Card



Here's straight talk

about

YALE GAS TRUCKS

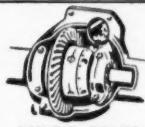
FOR ENGINEERS

Most starting slip takes place in coupling, not clutch. As slip of the coupling produces no wear, clutch life is increased 3 to 8 times.



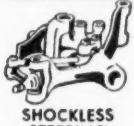
FLUID COUPLING

Triple reduction spur and hypoid gears to the drive axle are in an oil-tight housing. Has 4-pinion differential.



HYPOID GEARS

Inclined king pin reduces overhang of tires. Steering wheels turn at maximum angle of 80°. Articulated mounted steering axle for proper ground contact.



SHOCKLESS STEERING

Mounted on banjo housing inside wheel. Automotive type seal on wheel bearings. Positive equalizing action.



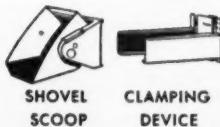
AUTOMOTIVE TYPE BRAKES

6 cylinder Chrysler Industrial—bore 3 1/4", stroke 4 1/4", 230 cubic inches piston displacement. The complete power assembly is supported on rubber mounts.



65 HP ENGINE

These are only a few of the exclusive or desirable features that add to the safety, economy, efficiency of YALE Gas Trucks. Attachments like those shown are available for special handling jobs.



SHOVEL SCOOP CLAMPING DEVICE

FOR OPERATING MEN

Reduces gear shifting and clutch using. Gives smooth starts and stops without lurching or stalling . . . making it easy to inch up on loads. Reduces maintenance.

Can stand up under punishing, heavy duty loads. They are sealed against dirt and dust . . . seldom need maintenance.

Provides passenger car steering comfort. All controls are located within easy reach. Road shock of rough terrain or floor level variation is minimized.

Extra braking surface permits smoother, safer, surer stops with heavy loads or when maneuvering in tight space.

Packed with plenty of reserve power for ramp climbing. Built for rugged, continuous service . . . seldom requires maintenance. Cool running.

YALE's complete Operator Training Program can mean smoother, trouble-free operation and longer Truck life. Ask your YALE representative for information or mail the coupon today.

YALE*

**INDUSTRIAL LIFT TRUCKS
AND HOISTS**

*Reg. U. S. Pat. Off.



The **YALE & TOWNE** Manufacturing Co., Dept. 49

Roosevelt Boulevard, Philadelphia 15, Penna.

Please have your local representative call on me.

Company _____

Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Manufacturing Company
St. Catharines, Ontario, Canada

Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers • Hand Trucks • Hand & Electric Hoists • Pul-Lifts

Circle No. 170 on Reader Service Card for more information

AD LITERATURE

Continued

The Big Difference: Magline, Inc. tells about the big difference in dock boards, and asks that you make the comparison yourself. Its pre-engineered boards are said to prevent damage to power truck tires.

Circle 92 on Reader Service Card

Maintenance Slashed: The important maintenance features of Wright Hoists built by American Chain & Cable Company are highlighted in a two-page spread. The 1954 models have nothing to adjust but the cam, and plant men say maintenance costs have been drastically reduced.

Circle 6 on Reader Service Card

Live Rollers: Mathews Conveyor Company shows an on-

the-job photo of its live roller conveyors, just one of the many types of conveyor manufactured by the firm. The live rollers are frequently used for conveying materials that could not be practically handled on belt conveyors. They may be hung from the ceiling, set at working level, or operate between buildings. Catalog HB-53 gives details.

Circle 101 on Reader Service Card

Bulk Storage Experience: If you're planning a new materials handling and storage system, The Marietta Concrete Corporation, will gladly put its bulk storage experience to work for you. Its concrete silos and storage systems are said to have built-in design flexibility that lets you adapt them exactly to present needs or change quickly to meet future expansion or conversion.

Circle 98 on Reader Service Card

Increase Production Efficiency
up to **30%**
while you LOWER equipment costs

There is no need to pay a premium for high quality production equipment. Our new manufacturing techniques have brought about revised pricing policies which now make it possible for you to continue to stress high production standards . . . yet reduce equipment costs at the same time. We invite you to compare the quality, performance, and above all, the price of Rack Hydraulic Equipment. Write immediately for more information about our standard or custom-built models.



**Turnabout
HYDRAULIC LIFT TRUCK**
With Interchangeable Forks
2500 lb. capacity

\$350.00
complete

HYDRAULIC UTILITY TABLES
1, 2, and 3 ton capacities
Priced from \$295



SHEET FEEDING TABLES
1, 2, 3, 5, and 10 Ton Capacities
Hydraulic and Electric Hydraulic operation

Priced from \$390.

HD-22

**RACK HYDRAULIC EQUIPMENT
CORPORATION**

CONNELLSVILLE, PENNSYLVANIA

Agents in Principal Cities, United States, Canada, Europe

Circle No. 128 on Reader Service Card for more information

66

Re-handling Eliminated: The Rollover Hopper produced by The Chas. Wm. Doepe Mfg. Co., Inc. lets you take small parts directly to assembly or production areas in original shipping boxes or kegs. Bulletin ROH-201 gives full facts on this small parts handler.

Circle 50 on Reader Service Card

England Study Course: Courses at the school of materials handling in the beautiful countryside of Kent, England, are offered by the College of Production Technology, Swinford Old Manor. Various study courses are available, for all levels of management.

Circle 47 on Reader Service Card

Three Savings: How to save time, space and dollars by handling production parts with Brusco parts handling equipment is told by Brummeler Steel Products Corp. The units are built to suit your particular handling problems.

Circle 30 on Reader Service Card

L-S

facts about fork trucks

52



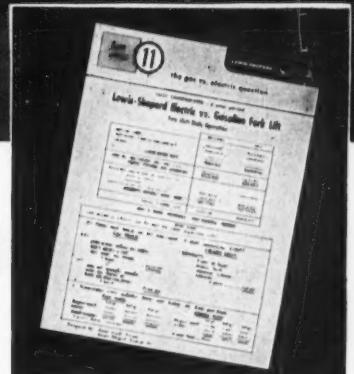
Long term cost advantages of electrics are well understood. However, in a three year operating period, a user of four L-S Electrics, like these, operating 5000 hours a year, saves \$7330.64 over gas truck costs.

3 Year Equipment, Operating and Maintenance Costs \$1832.66 less with L-S Electrics!

A Fact Sheet just released proves it . . . in only 3 years, a SpaceMaster Electric, complete with two batteries and a charger, costs \$1832.66 less to own and operate than a comparable gas-powered truck. These savings are based on three undisputed costs *only* — equipment, power, and maintenance — no allowance for savings on downtime is included. Moreover, many users of L-S Electrics get more than 10 years' dependable, cost-saving service from their SpaceMasters.

So don't be fooled by the difference in first cost. Electrics are more economical for 3 years or 10 years . . . and Lewis-Shepard makes the most economical electrics!

INTERESTED IN LEASING? The SpaceMaster Model "E" Electrics illustrated above may be leased for as little as \$4.26 per day. Write today for full information on complete L-S Leasing, Renting, and Financing facilities.



WRITE TODAY for this Fact Sheet on operating and depreciation costs!



LEWIS-SHEPARD[®]

14-9 Walnut St., Watertown 72, Mass.

The "MASTER" Line

Please send latest Fact Sheet on Operating and Depreciation Costs

Name _____

Title _____

Company _____

Address _____

City _____

State _____

Circle No. 89 on Reader Service Card for more information

AD LITERATURE

Continued

High Speed Plus Endurance: To prove the ability of Chrysler industrial engines to run for long periods of time at high speed, the company tested its Model 24A for 1000 hours at 3600 r.p.m. under a full load. The results of the test are told in this month's ad.

Circle 39 on Reader Service Card

A Flick of the Wrist Saves Dollars: Thomas A. Edison, Inc., Storage Battery Division, tells how minutes are saved each day by the hinged filler cap designed into its battery cells.

Circle 52 on Reader Service Card

No Range Limit: Whatever your handling job requires, regardless of shapes, weights, or sizes, a Heppenstall Safe-T-Tong engineered specifically to your needs will help speed

your operations, according to the Heppenstall Company.

Circle 71 on Reader Service Card

Exhaust Fumes Eliminated: The OCM Catalytic Exhaust is said by the manufacturer Oxy-Catalyst, Inc. to be the most important safety development in exhaust fume control since the gasoline engine was invented. The units give up to 2500 hours of service.

Circle 121 on Reader Service Card

Don't Move..



without AMERICAN

Use an American Hand Truck for Every One of Your Handling Jobs—More than 60 Models and Sizes!

AMERICAN Pressed-Steel HAND TRUCKS

Rugged pressed-steel-hand trucks for light, medium, or heavy loads; for kegs, cases, barrels, cartons, packages, drums, bags, boxes, bales, and crates. Single- and double-handle trucks; trucks for specific industries and special purposes.



AMERICAN -KEEN MAGNESIUM APPLIANCE EQUIPMENT

Magnesium appliance-handling equipment, with or without endless-belt stair-climber feature... for handling refrigerators, deep-freeze units, gas or electric ranges, automatic water heaters, radios, television sets.



AMERICAN Pressed-Steel Drum and Barrel Cradles

Pressed-steel drum and barrel cradles, with or without wheels, equipped with patented feature not found on other cradles—a loading bar—which enables a drum to be loaded and handled by one man.



AMERICAN INDUSTRIAL WHEELS

Complete line of sturdy, easy-rolling Steelite® Industrial Wheels—pressed-steel center, rubber-tread, ball-bearing design. Other types of industrial wheels also available.



Materials Handling by

AMERICAN
PULLEY COMPANY

The American Pulley Company

4290 Wissahickon Ave., Philadelphia 29, Pennsylvania

Circle No. 9 on Reader Service Card for more information

Protection in Storage and Shipment: The facts on how a super-strong, waterproof paper may be your answer to safe, lower cost shipping storage are contained in a 24-page free shipping guide available from American Sisalkraft Corporation.

Circle 10 on Reader Service Card

Modern Handling: Roebling slings are said to be economical, flexible and doubly safe for modern materials handling. The manufacturer, John A. Roebling's Sons Corporation, points out the slings are today's top choice for the big majority of lifting jobs.

Circle 136 on Reader Service Card

You Name It: The Oliver Corporation, A. B. Farquhar Division, challenges you to name the product, and they'll move it. The company further says it will solve your conveying problem at the lowest cost, with the greatest possible efficiency, and the smallest possible upkeep.

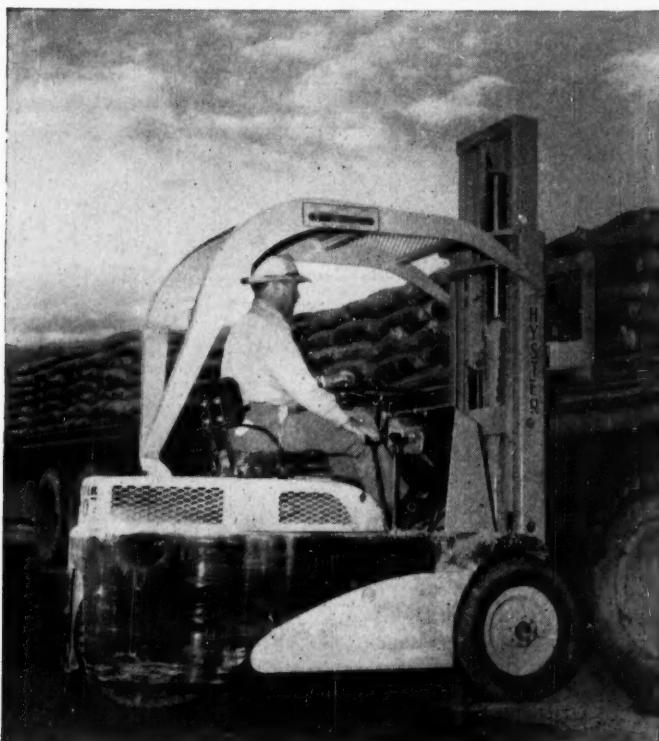
Circle 58 on Reader Service Card

Big Dock Savings: Faster handling, less breakage and greater safety are said to be possible by use of the new hydraulic ramp manufactured by Rotary Lift Company! The company offers complete data and prices.

Circle 138 on Reader Service Card

B.F. Goodrich

FREE TW ANALYSIS eliminates tire waste, cuts costs 20-50%



Outside operations? Hauling over rough surfaces can soon ruin good tires not suited to that type of service. The TW Analysis helps you select the right tire for every job.

Heavy loads? Overloaded tires fail prematurely, usually cannot be repaired. Let the BFG man show you how to match tire and load for maximum service at lowest cost.



THE money-saving B. F. Goodrich Tire and Wheel Analysis Plan attacks excessive tire costs by uncovering the *reasons* behind tire waste. What causes premature tire failure? Rapid tread wear? Cutting and chipping? The TW Analysis answers all of these questions and many more. This free analysis has cut tire costs 20 to 50% for hundreds of industrial tire users across the country. It can do the same for you!

Contact your BFG retailer or mail the coupon below. Without cost or obligation, a trained B. F. Goodrich man will study your materials handling operations. He will tell you what type and size tire, what tread design and compound will serve you best. He will recommend ways to improve your tire maintenance program. The advice you receive will be unbiased, for B. F. Goodrich makes a *complete* line of industrial tires—solids, pneumatics and semi-pneumatics. A special TW Analysis is available for manufacturers of industrial hauling equipment.



Tire failures like this cost money! This tire failed prematurely. BFG's TW Analysis helps you discover the reasons for tire failure, prevents reoccurrences, saves you tire dollars.



Specify
B.F. Goodrich
tires
when
ordering
new
equipment

The B. F. Goodrich Company
Tire & Equipment Division
Department TW-411
Akron 18, Ohio

Please send me:
 Additional information on your Tire and Wheel Analysis Plan
 Free copy of "Industrial Tire Guidebook"
 Free copy of "How to Get Extra Service out of Solid Industrial Tires"

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

Circle No. 64 on Reader Service Card for more information

U.S. ROYAL

INNACUSH — the original cushion solid

Here's the secret—double-tread exclusive with the Innacush! A tough, cut-resisting top-tread...a resilient, shock-absorbing inner-tread. And how this combination saves!



Soft-Ride Savings!

SAVES LOADS



With the Innacush, bumps are cushioned so completely the floor's actually leveled out. Thus your loads roll smooth, and safe—won't shift, slip or break.

SAVES TRUCKS



And the Innacush ride is easy on your vehicles. Because they're not jolted, you cut maintenance and repair—especially to steering gear and bearings.

SAVES DRIVERS



Innacush dampens vibrations before they reach your drivers, makes steering easier. You cut driver fatigue, improve driver morale, get more work done.

COMPARE THE AXLE-TRACING PROOF!



CONVENTIONAL SOLID magnifies shocks. See the irregular white line, traced on film by light on truck's axle. It indicates how an average floor jars load, vehicle, driver.

INNACUSH soaks up shocks. The same truck rides the same course—but look at this white line. Bumps absorbed—ride evened out. Load, truck, driver roll easy.

Quick-Change Special!
DEMOUNTABLE
INNACUSH



Only 10 minutes—and it's changed. No pressing charges. No expensive downtime.



U. S. Royal makes the finest industrial tires for every wheel, for every job!



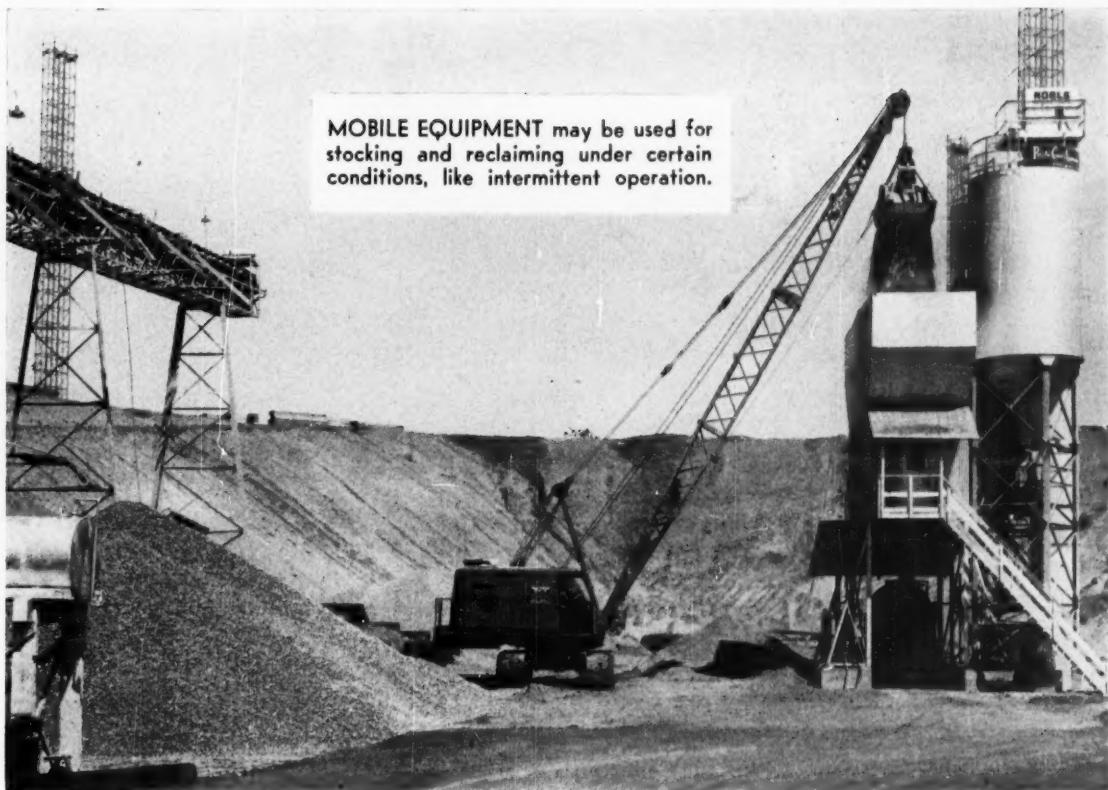
For further information, write to Industrial Tire Department

UNITED STATES RUBBER COMPANY

1230 Avenue of the Americas, New York, N. Y. • In Canada: Dominion Rubber Company

Circle No. 156 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954



MOBILE EQUIPMENT may be used for stocking and reclaiming under certain conditions, like intermittent operation.

How to select bulk material

Stockpiling Systems

By Edward H. D. Gibbs
Heyl & Patterson, Inc.

BULK stockpiling, which is an indispensable part of major industries such as steel, aluminum and power, is necessary to insure an uninterrupted flow of raw materials to continuously-operating units, including coke ovens, blast furnaces and power-generating stations.

Since these industries are dependent upon large quantities of bulk materials, the stockpile is the answer to the need for storage capacity between the source of the raw materials and the consuming unit which requires these materials. Furthermore, stockpiling is essential to absorb the differences between the rates of mining, transportation and final use of coal, ore, bauxite and other bulk raw materials.

Discussed here will be the various means of handling bulk materials in and out of stockpiles, together with their advantages and disadvantages, and to point out some of the considerations which should enter into

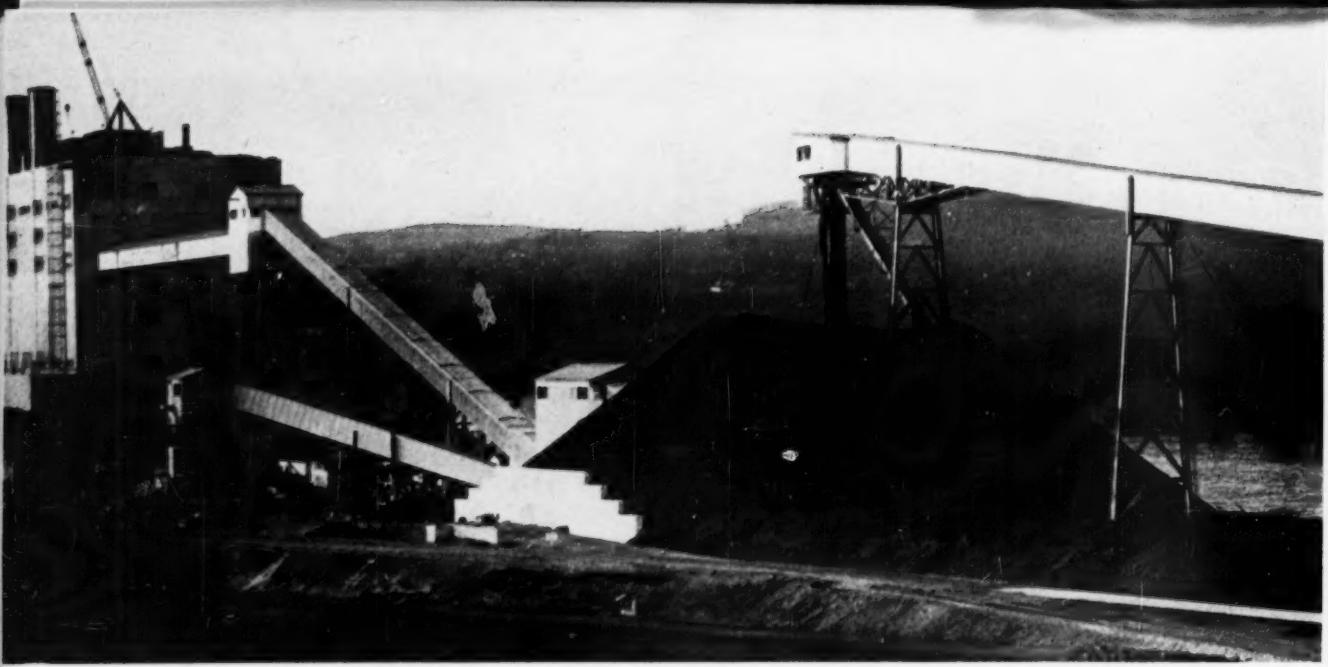
any determination of the best system in any particular instance.

Generally speaking, there are three basic methods of stockpiling and reclaiming bulk materials from stockpiles: They are: with mobile units (crawler or tire mounted); with conveyor systems consisting of stackers and tunnel reclaiming belts under the stockpile; with bridges spanning the stockpile.

The stocking and reclaiming of bulk materials by means of mobile equipment is generally associated with operations which are of short life, intermittent operation, or of small capacity. Also, mobile equipment is used extensively in conjunction with permanent installations.

There are no hard-and-fast rules for using one system in preference to another, or for combining any two or three systems. There are, however, certain fac-

(More on next page)



STOCKPILING SYSTEMS

Continued

tors which must be given careful consideration if the best method and type of equipment are to be used in each individual application.

Material To Be Handled

First of all, any system must be planned and designed in accordance with the nature of the material to be handled. For instance, ore, being very heavy and abrasive, is not too well suited for bulldozing, or for handling by mobile carrying equipment. However, a large tonnage can be stored in a relatively small space and to any height that will not exceed the load-bearing capacity of the ground.

Coal, on the other hand, being about one-third the weight of iron ore, requires proportionately larger storage area and must be stocked so that spontaneous combustion is avoided. Requirements to avoid spon-

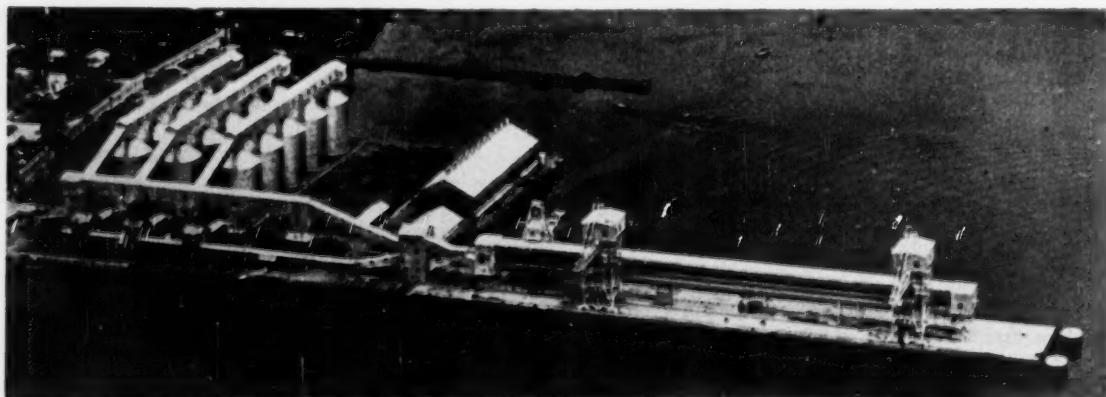
taneous combustion vary considerably with the type of coal, but, generally, compaction by rolling if the height exceeds about 30 feet, or the time in storage is to exceed 60 to 90 days, will prevent firing.

For this reason, reclaiming by tunnel conveyor is difficult, if not impossible, because the compacted coal will not flow readily into the opening above the tunnel. The danger of combustion also limits the time in storage. However, with proper compaction, storage time can be extended to several years.

Bauxite, another material which is stockpiled in large quantities, requires covered storage for protection from rain and wind, and is therefore stocked and reclaimed exclusively by conveyor belt systems.

The quantity of material to be stored depends upon the amount of surge capacity required. This varies

(Continued on page 121)





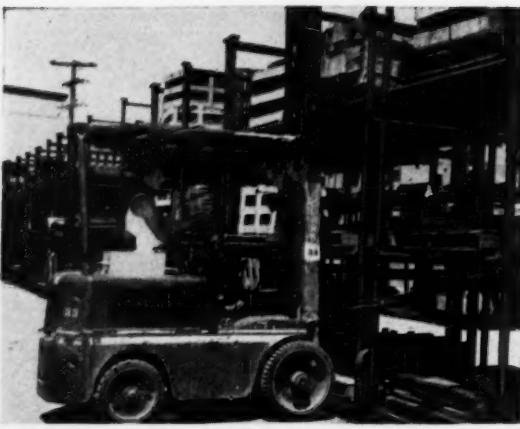
BELT CONVEYOR (upper left) is used in this surge stockpile. Coal is delivered by a 640-foot-long conveyor to a lowering well, then drops to hoppers below.

BRIDGE spans the stockpile in this long-term installation. The bridge unloads lake vessels into the stockpile, reclaims from stockpile to transfer car (above).

TUNNEL CONVEYOR for stockpiling under cover is required for bauxite, which must be protected from rain, wind. This station (lower left) is self-contained.

MOBILE SCRAPER and bulldozer equipment is ideal for stockpiling coal in irregularly-shaped areas. At the same time, it's compacted to avoid combustion (below)





ASSEMBLY system's radio is used by supervisors (above) to contact truck drivers direct for such jobs as withdrawing sheet metal parts for sub-assembly (left above) and motors (left below).

Area Dispatching . . .

Radio Serves Dual

A LEADING manufacturer of material handling equipment, the Industrial Truck Division of Clark Equipment Company, believes in practicing what it preaches. Incorporated in its own plant is a handling system which embraces the same principles of good handling the company recommends to users of its equipment.

Basically, the system embodies the use of fork trucks and towing tractors, and these individual pieces of equipment are able to operate as a closely-knit team through the direct, continuous supervisor-to-driver contact afforded by two-way radio.

The radio is utilized in a unique way. To obtain highest efficiency the company's material handling operations are divided into two separate segments: one to service manufacturing operations and the other to service assembly operations. And, because of the variance in duties involved, the segments are covered by individual radio systems, each of which functions differently.

Manufacturing System

Raw materials, such as castings, forgings and raw steel, are received, stored and dispatched by fork truck to manufacturing and fabricating departments

which make component parts used in the assembly of the firm's industrial trucks. "In process" components are moved from one operation to another, and when completed, are delivered to assembly stores, also by fork truck.

The movement of this material is under the direct supervision of a transportation and yard stores foreman who directs the operation of four radio-equipped fork trucks and one radio-equipped tractor-towed trailer train from a central dispatch base station.

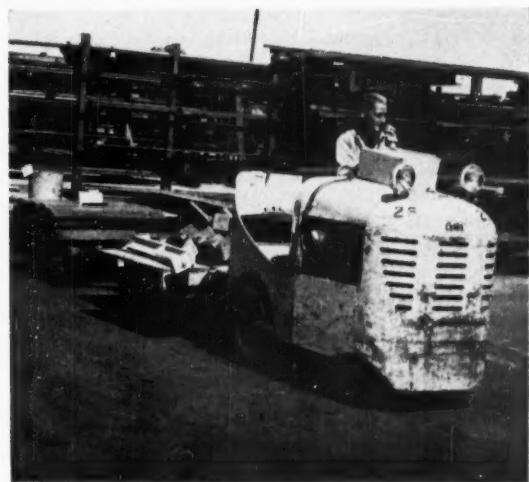
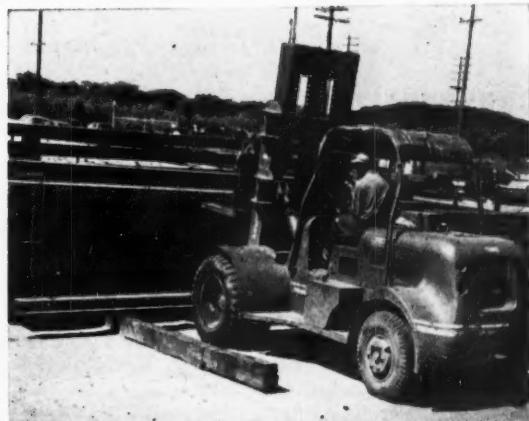
All but one of these mobile units have permanent work assignments which take up part of the work day. However, they are employed so they are readily available for special dispatch work during peak activity in any particular phase of the operations—for example, where unusually heavy workloads or peculiar circumstances require special handling in addition to that normally done by trucks regularly assigned in the area.

Requests for such additional trucking are received by phone from the various manufacturing departments by the transportation foreman. He, in turn, contacts the operator of one of the mobile units and dispatches him to the source of the request without delay.

These special requests are frequent, and the moves



MANUFACTURING system requires a dispatcher (above) to relay requests to drivers for raw materials (right above) or to trailer train (right below) which transports "hot" materials, tools, etc.



... Central Dispatching

Handling Functions

required vary in nature. Some examples include: additional transportation required for peak workloads; emergency requests for movement of "hot" materials required for assembly; non-routine delivery of supplies, tools, fixtures, etc.; requests for assistance from the maintenance department for moving and repairing operations; requests for extra-heavy or unusual transportation problems.

Benefits from Radio In Manufacturing

Prior to the installation of two-way radio, production labor hours were constantly lost in attempting to provide balanced transportation and material handling services, due to fluctuation of peak loads in the various manufacturing phases. Certain operations suffered a loss of production hours through lack of transportation while, at the same time, other operations might have a temporary surplus of transportation service.

By means of two-way radio communication, it was possible to reduce both equipment and personnel in the manufacturing areas. This reduction represents a savings of approximately \$15,000 a year, and at the

same time provides increased efficiency through the reduction of idle productive time previously lost in waiting for movement of material.

Assembly System

All components processed through the manufacturing operations, as well as all parts brought in from outside sources as ready-for-use materials, are received and stored in one main inside stores department and two large outside storage areas. Larger components, such as engines, counterweights, tires and sheet metal parts cannot be delivered in volume to the assembly points at one time; thus, several deliveries of such components are required daily.

Small parts which are not stored immediately adjacent to the assembly point of use are accumulated into production run lots in the main stores department for subsequent delivery to final assembly. And, due to the diversity of parts used in the assembly of approximately 40 different industrial truck models each month, combined with the various sub-assembly operations supplying three major assembly lines, dis-

(Continued on page 127)

conveyorized handling . . . it can make the

White Collar Foundry

By L. J. Bishop, Vice President and Director of Engineering, Mechanical Handling Systems, Inc.



APPLYING scientific material handling principles to conventional sand foundries, we have designed much automatic operation and efficient material flow into them.

But we have always been limited because mold production has depended upon relatively slow, variable and capricious hand labor.

There's no point in setting up a high-capacity, automatic mold storage and delivery line, for example, if mold production is not going to be uniform and predictable.

On the other hand, an automatic machine to make the new shell molds, one capable of producing hundreds of high quality molds per hour, would furnish the basis for the sound and complete mechanization of a foundry. It could use many of the automatic production principles which have been proved in other industries.

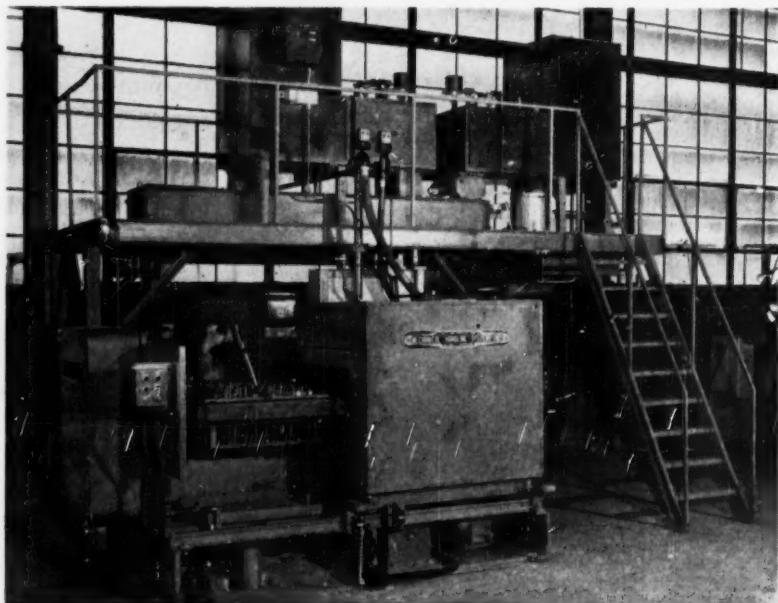
New Technique Based on Simple Principle

The basic principle of shell molding is simple—as are the mechanics. A mixture of sand and resin is applied to a heated pattern plate; the heat melts the resin; the resin binds the sand into a smooth mold. Then you take a matched pair of these molds, hold them together, pour in molten metal, allow the casting to cool, and remove it from the mold.

Actually, nothing is that simple, and certainly not the production of high quality castings from shell molds. It takes a lot of study and a lot of experimenting to learn how to run a shell mold operation—and a lot of equipment, too—to get uniform and dependable results.

Two factors have tended to make companies working with shell molding rather secretive. First, the patent situation was clouded by several hundred patent applications on improvements in the original proc-

SINGLE-STATION shell-mold equipment which can turn out 40 molds of average thickness per hour. After push-button starting, all operations are automatic.



Shell mold casting, the technique of using resin-bonded sand shells for casting metal, is the newest and perhaps the fastest growing of the precision metal casting methods.

The ability of shell mold casting to deliver pieces that are close to finished dimensions is an important feature of the process. This is the clue to the economic appeal of shell mold casting: If a raw sand casting costs 10 cents but requires \$2 worth of machining to finish it, then a shell mold casting that costs 25 cents initially but needs only 50 cents worth of machining is a better buy—if enough pieces are produced to amortize tooling costs. Thus, if the tonnage of shell molded castings triples in the next two years, as some have predicted, it will not only be because it is a cleaner foundry method but also because buyers of castings find it less expensive.

*David W. Veit, Editor, Precision Metal Molding
A publication of the Industrial Publishing Group*

ess, and by claims of representatives of the German originator. However, the basic shell molding process was, along with other German inventions between the start of World War II and January 1, 1946, declared to be public property by our government. No basic patent applications have been granted thus far; so, it is logical to assume that the process remains public property.

Probably a more powerful influence for quiet development was the potential competitive advantage that might accrue to the *successful* pioneer in shell molding.

And that suggests that perhaps we should discuss

briefly the advantage of shell molding over conventional processes.

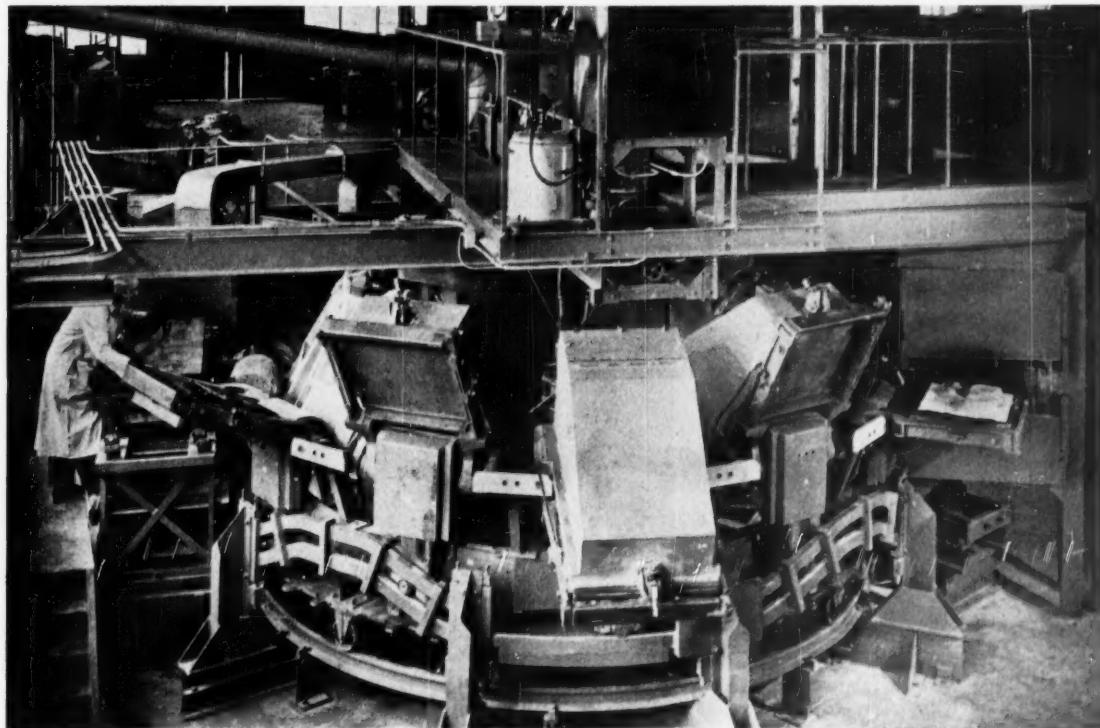
Many Good Reasons for Development

First, production of molds is simplified. It's a *mechanical process*, accomplished by a *machine* and requiring only an *unskilled operator*. One ordinary worker using shell molding equipment can out-produce several highly skilled and highly paid green sand mold makers.

The molds produced by the unskilled operator and his machine are far more accurate than those made

(More on next page)

TWELVE-STATION machine produces 480 molds per hour, could be heart of automatic foundry.



Continued

by conventional methods. They have smooth, dense surfaces; yet they allow free passage of gas when the metal is poured, thus preventing blow holes and defects caused by gas.

The castings produced by the shell molding process have remarkable close-tolerances. Accuracy within a few thousandths of an inch is easily attained, and the surface of the castings is so fine that finish machining is unnecessary or held to a bare minimum.

Shell molds are formed an eighth to three-eighths of an inch thick, and weigh only a fraction of the poundage of a conventional mold. The lightness of the molds makes a tremendous difference throughout the foundry by reducing the material handling load per pound of casting produced.

So, there has been plenty of pressure for development of the shell molding technique even though much of the work in progress wasn't talked about. And, as the process has matured, the fund of information about temperatures, sand-resin proportions, mold adhesives, backing agents, and other details of technique and production have become quite well known.

The machinery that makes the shell molds must be as efficient as the molds themselves. It must be capable of turning out mold after mold of uniform thickness, physical characteristics and surface finish. It must be flexible so that patterns can be changed easily to conform to production schedules. Properly designed, it could key up the whole foundry, setting standards of efficiency that would carry through every operation in the establishment.

Since there was no such high production shell-mold equipment on the market, we designed, engineered and built one—a 12 station machine capable of producing

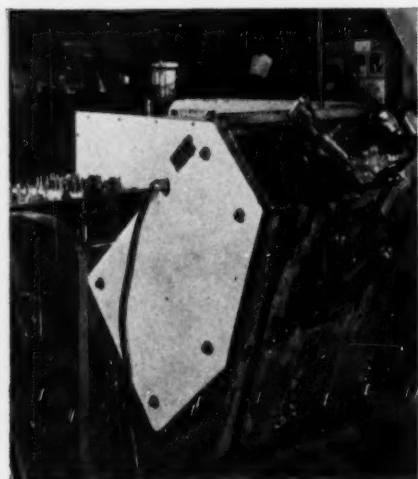
480 molds per hour. Only one man is required to operate it.

Following are the elements of automatic production included in this machine:

Mixing equipment for sand and resin is located on top of the unit. Here are hoppers for sand and resin, and a tank for the wetting agent which is added to keep down dust and increase mold strength. Automatic proportioning devices measure and control the flow of sand and resin into the mixing chamber, where the two materials are thoroughly mixed together with small amount of wetting agent. Prepared mix is conveyed to the supply hopper, from which it is automatically fed to the individual hoppers below.

The machine revolves counter-clockwise, with the shell removal station at the far left at the end of the cycle. Each of the 12-stations produce a shell mold with each complete revolution of the machine. Pattern size on the machine is 22 x 28 inches. There can be 12 identical patterns, or any variation between. Patterns may be changed at any time without halting production.

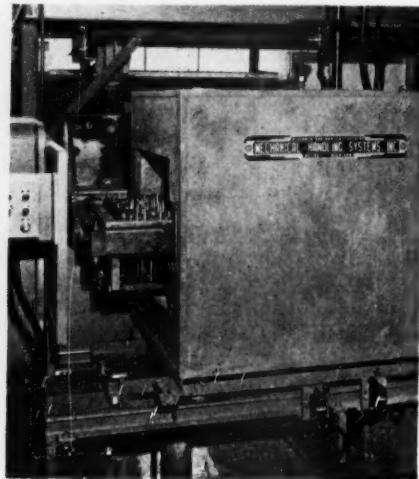
The pattern, after it leaves the shell removal station, rises to engage its hopper. As the machine progresses, pattern and hopper descend to below the horizontal, and the sand-resin mixture drops onto the pattern. Then the pattern and hopper rise, excess sand drops into the hopper, the pattern is disengaged automatically, and returns to the horizontal. Pattern and raw shell mold now enter the oven, held to the proper temperature by radiant-gas-fired burners, and the mold is cured. During movement of the pattern through the oven, its corresponding hopper is replenished as it passes under the sand-resin supply point.



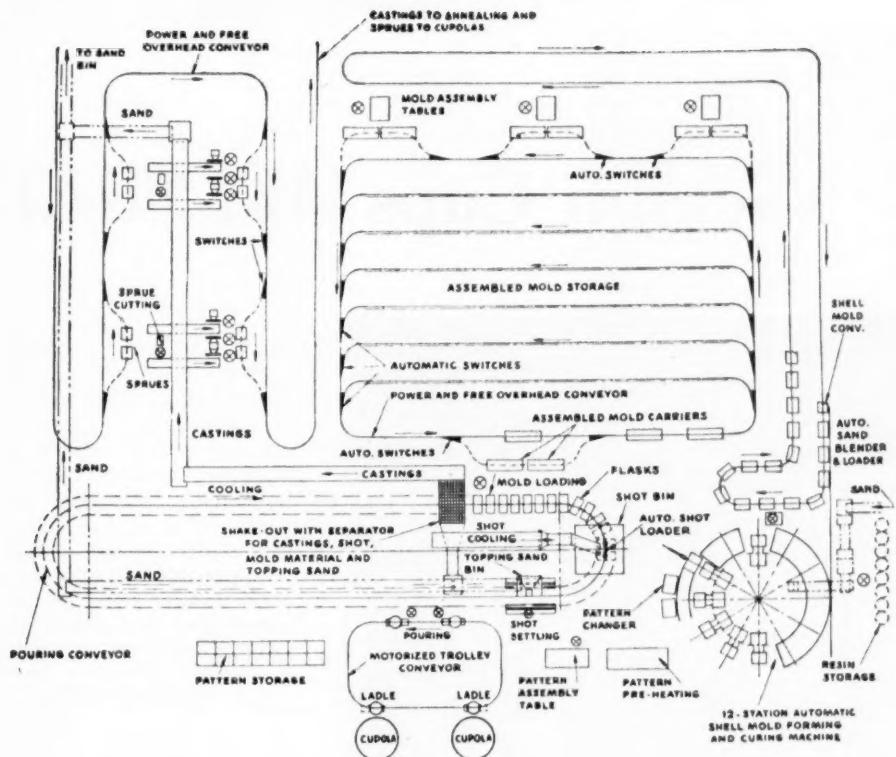
LEFT: Molding mixture feeds automatically to dump box while box is at rest, 45 deg. beyond vertical.



CENTER: Plate and dump box latched together.



RIGHT: Gas fired oven moves to envelope pattern.



WITH one 12-station machine, foundry can produce about 50 tons of small castings per 8-hour shift.

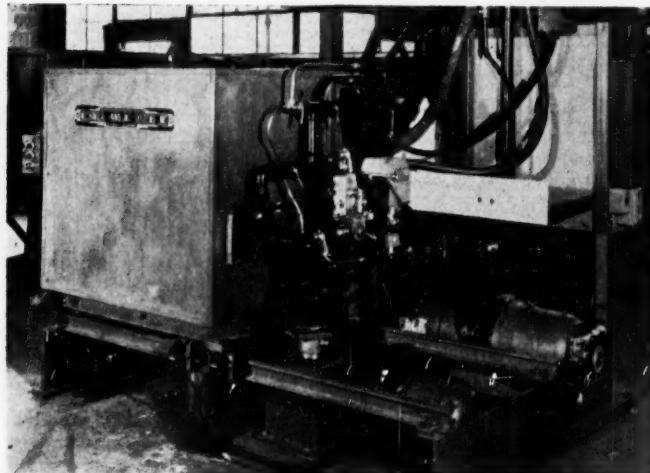
When the cured mold emerges from the oven, its ejection pins are raised—by means of cams which engage rails placed at this station—and the mold is lifted off the pattern and easily removed, either by hand or by automatic transfer device.

This machine can make possible a shell molding foundry so completely automatic that a work force of only 15 or 16 men can produce 50 tons of small castings in an eight-hour day.

Machines for Smaller Plants, Too

The principles of this high capacity machine have been adapted to meet more modest production requirements. A six-station shell molding machine uses this same principle, revolving the patterns around a central axis, with each operation taking place automatically. Capacity of this unit is 240 shell molds per hour.

(Continued on page 106)

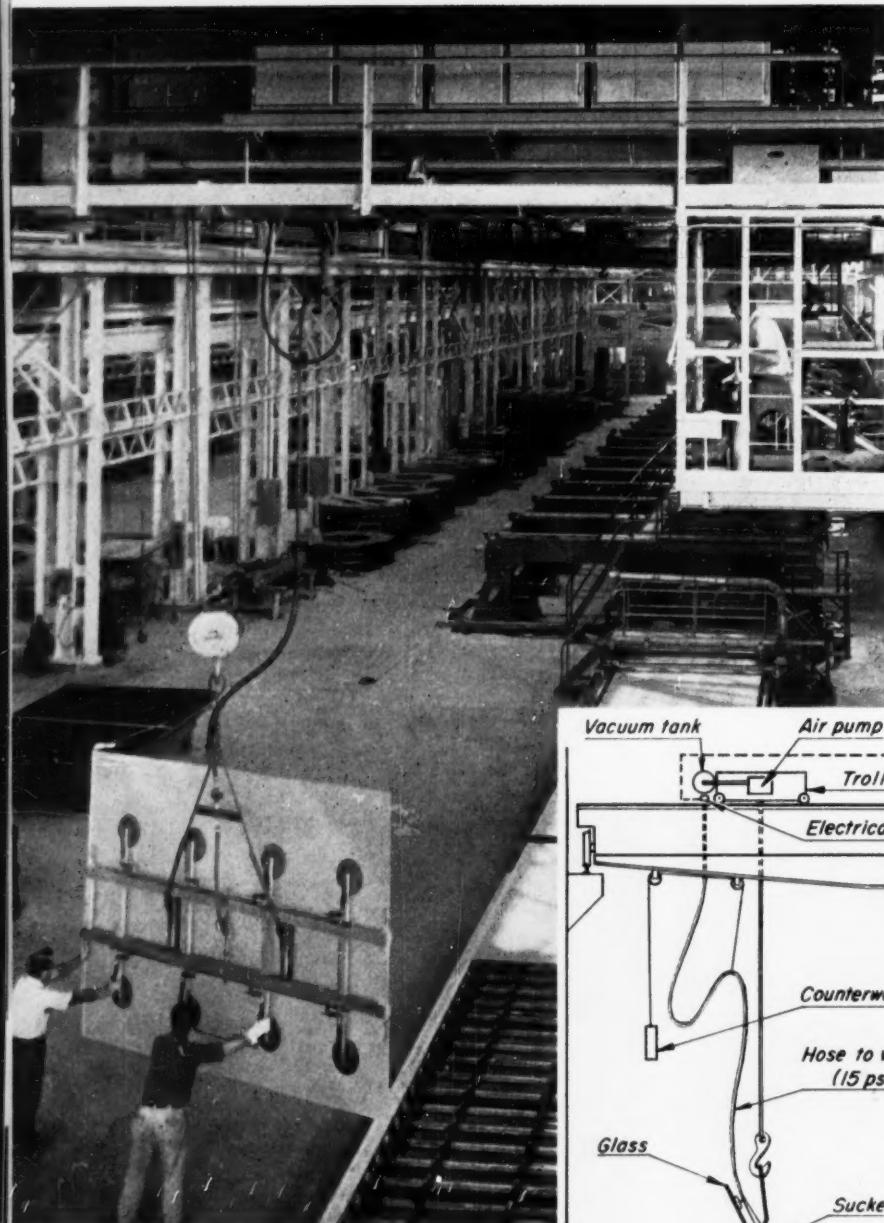


FULLY to left, oven is in curing position. Heat loss is controlled by baffle closing open (hidden) end.

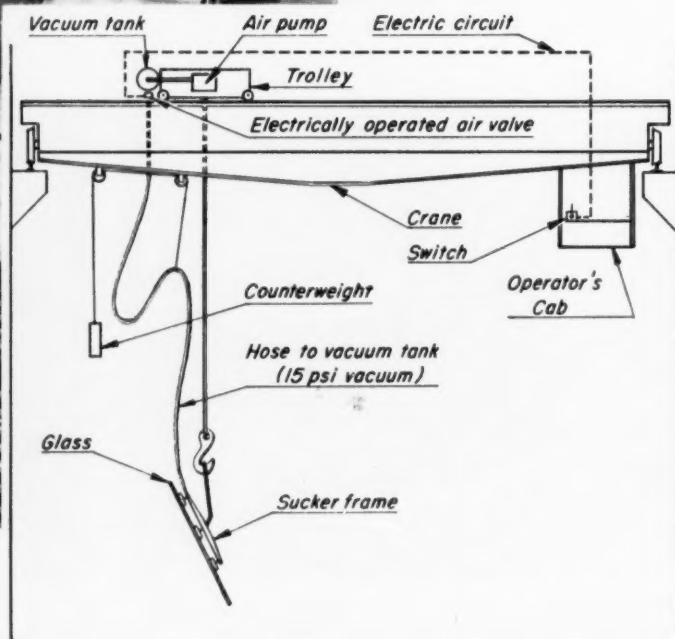


LACK of permanent connection in stripper operation permits use of solid bottom oven for economy.

Vacuum Cups Aid SHEET



FRAME AND CRANE which pick up large pieces of plate glass from twin grinder are shown in picture and sketch of system. Operation shown is at end of conveyor line.



HANDLING

FOR processes requiring the movement of large sheets of delicate or fragile materials, here is the method developed by Libbey-Owens-Ford Glass Co.

As might be expected, the firm has long lived with the problem of handling large sheets of glass through the various operations in their plants. But, now, the new Twin-Grind line at Rossford, Ohio, successfully combines material handling with a continuous production flow. From the annealing lehr, a 100-inch wide ribbon of glass moves on a specially designed conveyor, through the various grinding operations, a distance of 830 feet to the cut-off operation, without any manual handling. At this point, a travelling crane and a vacuum sucker frame round out the movement of the sheets—from the remaining polishing operations to final packaging.

Before the development of the vacuum sucker frame, glass was transferred from the grinding tables to a buck by means of slings. Leather straps with handles at each end, each of these was manned by from two to four men. From four to eight men, then, carried the glass. This system was costly and dangerous.

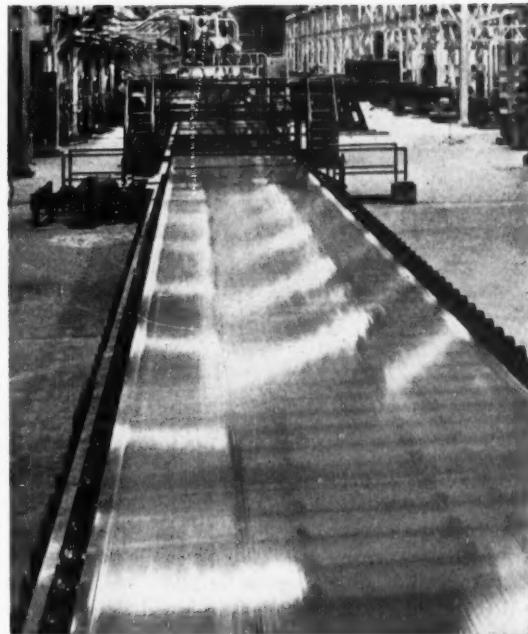
No Lifting Required In Production

Now, however, a single sheet of plate glass, 124 x 150 inches, weighing nearly 700 pounds, can be handled by two men—one to operate the travelling crane, the other to guide the sucker frame and the glass.

These frames have been made of wood, aluminum, and some with piping. The suction cups are rubber with different types designed for handling smooth or rough-surfaced glass. A hose leads to the vacuum tank atop the crane. Maintaining a vacuum of 15 pounds per square inch, it is controlled by the crane operator by means of an electrically operated air valve. The tank itself is attached to a moveable trolley containing an air pump, thus allowing movement in three dimensions.

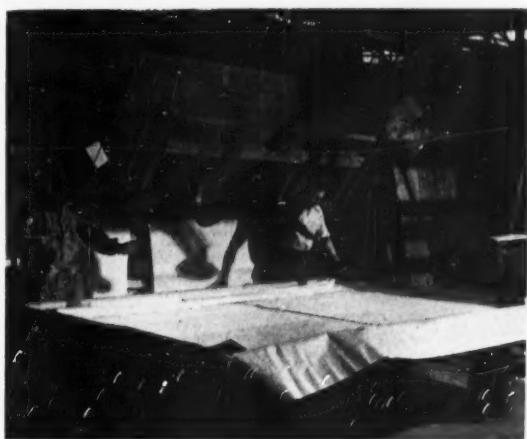
Similar cranes are used to strip the glass from polishing lines to the washing machines, thence to inspection racks, cutting tables and, finally, into the packing case. Probably the world's largest sucker frame was that designed to handle the 50-foot long heavy plate glass made for the "Festival of Britain". The frame was as long as the glass.

In the operation, plate glass moves from the forming end of the big continuous-melting tank furnace, through the annealing lehr, and onto the twin-grinder. The massive grinders receive the continuous rough blank at one end and grind both surfaces smooth and parallel simultaneously.



MOVING on roller conveyor, continuous ribbon of glass travels from annealing lehr to twin grinder. From grinder, sheets are handled by the frame.

The Twin-Grind line is housed in a plant 573 feet long an equal to six stories in height. It took two years to build the foundations for the equipment. There are 22 twin heads to the machine, each weighing 58 tons. Caissons were sunk to a depth of 90 feet in bedrock to insure the necessary precision. Part of the installation included laying two miles of railroad track on the grounds. In the plant, five overhead cranes, from 5 to 20-ton capacity, were installed to service the line.



IN PACKAGING operation, crane manipulates vacuum frame for placing sheet in box. Glass is packed with paper sheets between pieces, in bed of straw.

.4 tons per man-hour increase from . . .

Warehousing Incentive System

EIGHTEEN months ago The Scrivner-Stevens Company of Oklahoma City was faced, as most wholesale grocers were, with ever-mounting labor costs and a physical plant that had grown like "Topsy".

Having recently converted from a straight wholesale operation to a cooperative plan—sponsoring the Red Bud Supermarkets the firm found it necessary to revamp completely the entire operation so as to keep overall costs within the small and fixed margin of profit allowed by the plan.

The problems were many and varied. For example, the building was actually a combination of six structures with walls knocked out—dark, dingy, and complicated by a series of ramps. Equipment, long operated as cheaply as possible, was causing ever mounting repair bills. Relations with the Union were strained as there was the feeling among the employees that "Changes will cost jobs".

New Methods Develop Efficiency

Today, tons per man hour have been increased .40. Operational costs have been cut 1.7 percent. And not

one man has been laid off, for those who normally would have left, anyway, were not replaced. In the process of this rather startling improvement, several new methods of control and operation were developed.

Because, to begin with, we wanted cleanliness and color, we subjected the warehouse to a complete face lifting. Floors were scrubbed and painted red. Light green paint was used on all walls and racks. A regular schedule of cleaning was installed.

The next problem was: What system to adopt? The slot area, memory, and combinations were studied. Surveys were made of other, similar operations. A model of the warehouse was built. Rack combinations were tried on the model. Maximum stocks and movement were considered. Since the warehouse was old and a combination of buildings, the fifteen-foot-spaced posts presented a problem in lost area as each building was different.

Angle stacking was tried on the model and discarded because of loss of space. Equipment limitations were studied through the use of model fork trucks and towing tractors.

CONTROL TAGS are applied at instant of unloading, with receiving clerk obtaining data for slot assignments, in event of new items, from control center by intercom.



Production has been built to 1.9 tons-per-man-hour, costs cut over 2 percent of gross, within two years at Scrivner-Stevens Co., Oklahoma City. Operations Manager D. Robert Catlin tells how.



As the offset posts in the various sections prevented the use of straight racks in the assembly line, racks were simply curved around them. Nine foot aisles were laid out, as were mass stacking areas—two, three, four and five deep. A basement area with elevator and areas to the east and west of the assembly line were indicated for reserve stock. A section of rack was laid off in 18-inch slots for slow moving articles. A traffic pattern with the least amount of travel was indicated. The rack area, mass stack area, and stack-off area were numbered consecutively, following the traffic pattern. Space had now been indicated for the 3,600 items to be handled.

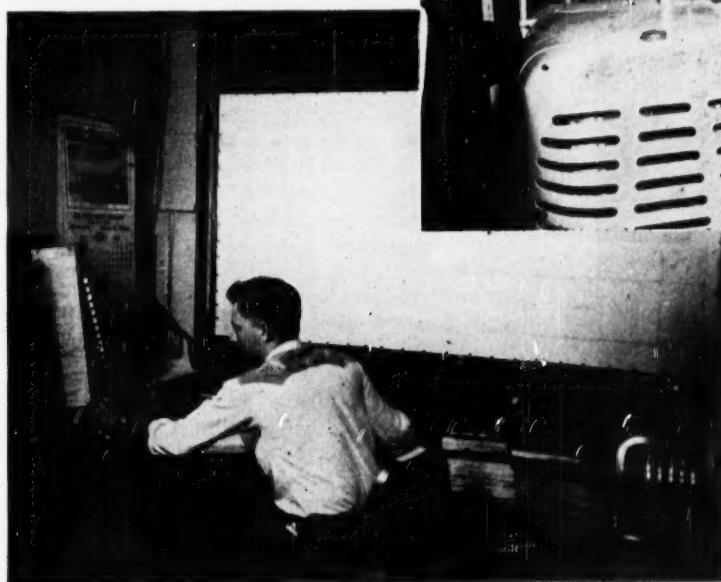
Double-Check Stock Controls

The problem of control was now considered. A scale map of the house was drawn, placed on the wall, and the slots indicated and numbered as the warehouse was numbered. Over this map a transparent plastic sheet was placed. As items were assigned to slots the punch card code was entered on the map. Slot numbers were in red; the code numbers in black. This allowed immediate reference to empty holes in the line for reassigning.

As the punch card operator posts "outs", the article is removed from the map and is shown by the ware-

(More on next page)

BELOW: Control center with upright cardex (left) and map showing all slots and bays. Below map is communications center connecting all sections. **RIGHT:** Tractor train operating on picking line.



WAREHOUSING INCENTIVE SYSTEM

Continued



BULK BAYS reserved for items picked in large loads and for reserves required for picking line. Lift truck operators get cash bonus for eliminating short items.



LOADERS in trailer, stacking orders from picking trailer. Cases are marked with different colors (showing white in picture) for fast unloading at destination.

house to the operator on a slot assignment form to "No Slot". When items are dropped from the house order book, they are dropped from all warehouse records. Thus, new slots are constantly made available for assignment to items newly arrived for which no slot number has been assigned. From the buyer's purchase order, punch card code numbers are noted on the map and shown on the receiving forms for slot punching.

To give a code as well as slot reference, a single-line, upright Kardex is maintained by numerical code number, the map and Kardex acting as cross reference.

Tag is Key to Movement

The next problem was to control the physical movement of the stock.

For this we designed a paper tag showing: (1) the date of receipt (for stock rotation); (2) the initials of the receiving clerk; (3) the number of cases on the pallet (for checking receiving and spot stock counting in the reserve area); (4) the code number for punch card liaison; and (5) the slot number for house movement control.

The use of this tag is considered the key to the physical operation. It is attached to the lower right hand case on each pallet immediately upon receipt of merchandise.

If the article has been stocked by the house, information for the form is taken from the cardex. In the event of new articles, receiving clerks—both truck and rail—call by intercom for a slot assignment.

The tag allows all house functions except receiving and checking, to be done by number. This system does away with the common mistakes as to size, type, and label of items; it increases the number of cases produced by the list pullers since every item is pulled by number only.

In the assembly line, when cases get down to five, this tag is removed and brought to the loading dock by the list puller. The checker then calls by intercom to the reserve areas for stock replacement. A fork truck operator in the reserve area makes a pallet load of the article available for the line fork truck operator, whose duty it is to have the assembly line filled.

By assignments such as these—clarifying, outlining and restricting duties—a smooth flow of incoming and outgoing groceries is achieved. List pullers, pulling by quantity and slot number only, have accomplished a continuing upward spiral of production.

On the dock, checkers mark customers' orders by using different colors for each stop. For example, Order Number 1 is indicated by making a black mark across the face of the cases; Order Number 2, by white; Number Three, by red; Number 4, by blue, etc. Loaders load the cases with the color-marked side facing the rear of the trailer. Thus, a driver knows instantly which cases are to be unloaded.

(Continued on page 122)

Storage Systems for Case Goods . . .

- Ups warehouse capacity 50%
- Saves cartons, contents & costs

If you handle materials in packages, cases or cartons, you'll be interested in seeing how this company increased warehouse capacity substantially—without expensive construction—and, at the same time, gained some decided cost advantages. And it was all done with a fork truck and prefabricated racks.

Having increased the productive capacity of its fabric dyeing plant at Emporia, Virginia, the firm of M. Hausman & Sons was faced with a serious shortage of storage space. Before the production boost there was 8600 square feet of space in which to store approximately 1100 cases of greige (undyed fabric) and finished goods. Cases were piled one on top of another, two and three high, separated by four-foot aisles. No pallets or lift equipment were used. Accessibility to most cases was poor, and it was difficult to work in the narrow aisles. It took two or three men from 15 to 20 minutes to locate a case, remove it from stock, and replace any cases which were in the way. This constant rehandling resulted in damage to cartons and often to their contents. Many times it was impossible to reuse greige goods cartons.

To obtain maximum use of storage cube, the firm installed an open-frame type rack upon which cartons

could be stacked direct. To handle the loads to, into, and from racks, a fork truck that would operate in an eight-foot aisle was procured. An analysis of case sizes showed they did not vary sufficiently to justify adjustable rack spacings, and it was decided to sacrifice some flexibility for lower cost design and installation.

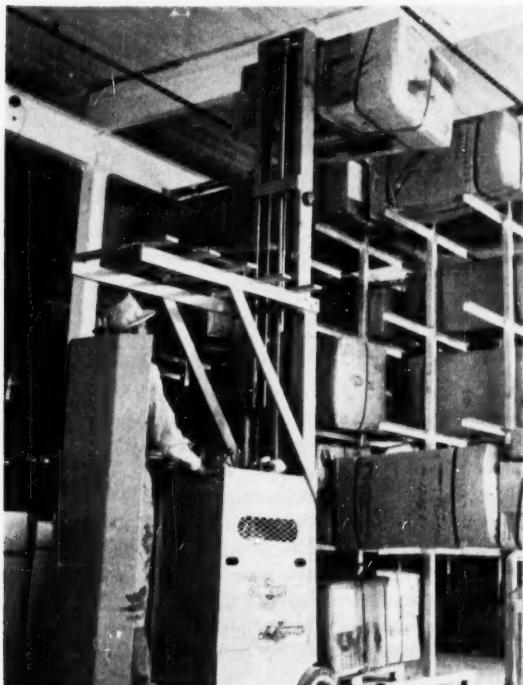
One-Man Stock Picking

With the new racks, it has become possible to store 1650 cases—an increase of 50% in the same area. Cartons are now easily accessible as each is in its own rack space. One man is able to locate and pick one out in three or four minutes. In all, the firm estimates that it takes one-eighth the number of man-hours previously required to do the same job. And all cartons can be re-used—damage due to handling has been eliminated.

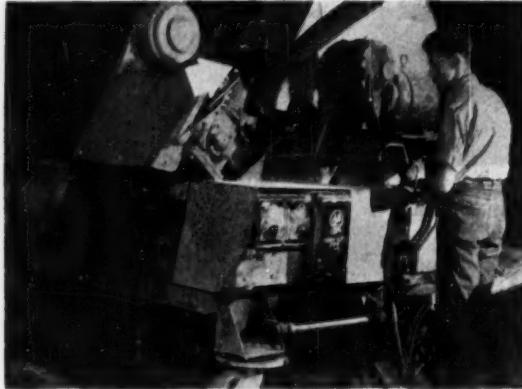
With these savings, plus those in overtime pay, order processing time, and general warehousing efficiency, M. Hausman & Sons feels the installation will pay for itself within two years.

FLOW'S thanks for pictures and information on this installation go to Equipment Manufacturing, Inc., Detroit, and to Gilbert-Tucker Associates, New York.

PRE-FABRICATED FRAME and fork truck, principal elements in new warehousing method which has made maximum use of area cube, eliminated all damage due to handling, produced faster order picking, delivery.



COST CUTTING IDEAS . . .



AUTOMATIC SCRAP REMOVER PAYS

The Charlotte Pipe and Foundry Company has installed a magnetic pulley on its sand conditioner, with resultant savings in time, labor and material. The sand conditioner picks up sand from the molding floor, cleans the scrap metal from it and lays it back on the molding floor. Sand, about three inches deep, drops on a 20-foot conveyor belt and then passes over the magnetic separator which attracts and holds all scrap metal. The scrap removed by the pulley consists of iron particles spilled during the pouring process. About 14,000 pounds of scrap is removed a week. If the scrap is left in the sand, it would possibly become part of the mold and cause a flaw in the finished pipe.

INTER-PLANT HANDLING SPEEDED

Collapsible containers are being used to speed inter-plant transportation of parts and save on costs at Ford Motor Company plants throughout the country. Numerous types of parts go into the containers, which may make as many as 24 inter-plant trips during a year. In return of empties, four collapsed containers are carried inside one open unit. There is no charge-out between plants for the thousands of containers in use. The containers are wire mesh, providing a visible inventory. They can be safely tiered, and also provide storage flexibility between shipments. Storage areas can be rearranged or re-located overnight. Mechanical unit loading of the containers drastically reduces manual handling and material damage.



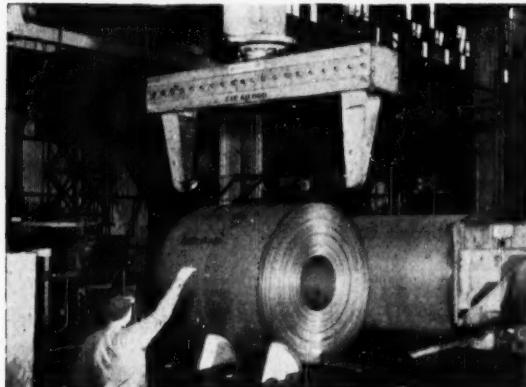
FULLEST EQUIPMENT UTILIZATION

The Pfaudler Corporation has taken advantage of available yard space for storage and freed valuable in-plant space for production, through complete utilization of its 10-ton self-propelled crane. The crane uses a special gooseneck boom with plate clamp to unload cars of carbon steel plates up to 120" x 360" x 5/8", and weighing 7500 pounds each. The steel is transported by the crane to storage racks and then to the plant door, as needed for production. The crane also reaches into the plant to pick up semi-fabricated steel tank jackets to transport to yard storage, moving them back into the plant again as needed to meet production schedules.

**COST CUTTING
IDEAS . . .**

TIME CUT 25%; SPACE UPPED 300%

Pallets, lift trucks and good solid planning have enabled the North Philadelphia plant of General Baking Company to realize considerable time and space savings in its refrigerator-room storage operations. Formerly, rolls of waxed paper were loaded onto skids at the receiving dock, transported by hand trucks to the cold storage area, and either left underneath overhead racks or unloaded one at a time into the racks—a time consuming operation. Now, the rolls are put on pallets at the receiving area, quickly carried to the cold storage area by fork trucks and stacked three high. The company claims a 25 percent savings in time and a 300 percent increase in space utilization.



TONGS SIMPLIFY COIL HANDLING

Specially designed motorized tongs, carried by a crane high above, are cutting costs and adding new ease to the handling of coils of strip steel at the Cleveland Works of the Jones & Laughlin Steel Corp. Operating between the continuous pickling line and the cold reduction mill, they make lifting, carrying, and safe delivery of coils virtually a push-button operation, saving time and floor space and insuring the safety of personnel. Controlled by the craneman from his cab, the tongs carry coils ranging from 20 to 72 inches wide, and weighing up to 60,000 pounds. They can up-end to a vertical position, and, if needed, can turn a coil horizontally through a full 360 degrees.

USELESS HANDLING ELIMINATED

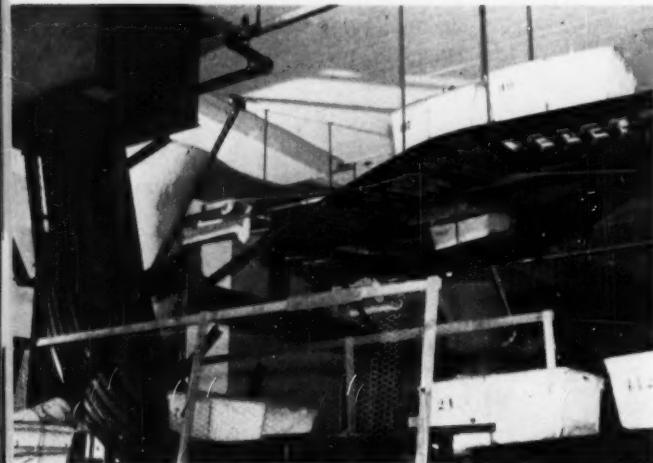
A short while ago, flasks were handled manually at the Waterbury Manufacturing Company brass foundry. Now, they are handled mechanically by a conveyor system. Previously, when molds were made, they were placed in pouring position along floor-mounted channels. When ready for shake-out, they were lifted onto hand trucks and pushed to a shake-out stand. Both operations required heavy manual handling. Skilled molder's time was wasted in non-productive handling operations. Now, when a mold is made it is conveyed to pouring location on conveyors and poured off by pourer. After cooling, molds are pushed back along the conveyor to shake-out station. Belt conveyor takes sand and sand bin for reuse.



Order Picking System Provides One-Day Wholesaler Service



STARTER, right, begins order filling process on 3rd floor by placing order slip in basket from return line. Two conveyor levels plus power express prevent jams.



FILLED orders (background) arrive on 2nd floor by chute, travel on suspended roller line to dispatching station. Vertical lift (foreground) returns empties.

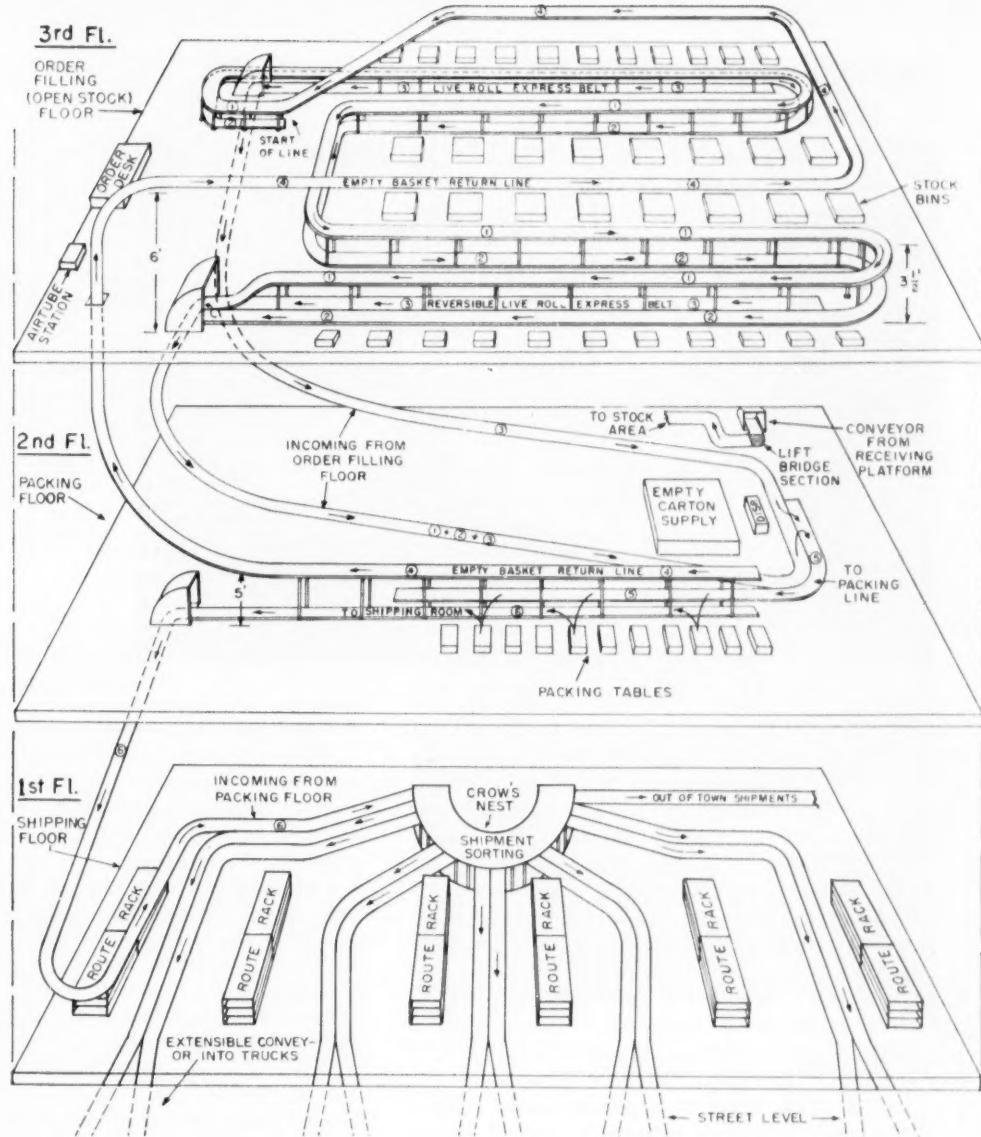
Adaptation of production line techniques to drug warehousing has overcome the difficulty eventually faced by most successful service organizations—maintaining a high level of customer satisfaction, as business increases, without great increases in personnel or physical plant expansion.

LARGE WHOLESALERS, particularly those serving such fields as the retail drug trade, must be geared to process and ship orders rapidly.

The average drug store has a limited amount of storage space in which it must stock several thousand varieties of medications and sundries. Out-of-stock items lose sales and, sometimes, customers for retailers. As a result, most drug stores have come to expect their wholesaler to deliver orders within a day after receipt. The same is true, in varying degrees, of most retail wholesale relationships today.

Recognizing that it would soon be hard pressed to maintain its desired standard of service—as business grew steadily—the management of Philadelphia Wholesale Drug did some long-range planning last year, with latest material handling methods the basis for studies of new operational techniques.

The firm had the complication common to drug operations since the war—rapidly expanding lines leading to substantially increased numbers of items per order. This development not only increased the handling time per order but also called for more working and storage space in the warehouse. With more than 20,000 individual items already in stock, and about 4000 orders filled per week, the problem, then, was to give routine service to nearly 1500 customers and—equally important—have the capacity to



THREE-FLOOR
continuous flow
system which
makes order selec-
tion almost auto-
matic at Phila-
delphia Wholesale
Drug warehouse.

handle additional business without upsetting schedules.

It was decided that two avenues of improvement—(1) centralization of stock and (2) mechanization of order handling—would circumvent the most costly alternative, new construction.

Too Much Time and Effort

A brief description of the old method of operation will help provide a better understanding of the new system.

Each order processed may call for any number of individual products, sometimes up to 500 items, and in any quantity. Large quantities are, of course, shipped in case lots. Most orders, though, call for less than case quantities. To fill these, much of the warehouse space is occupied by rows of shelving from which individual items are picked as needed. The warehouse occupies a seven-story building of 150,000 square feet.

On the uppermost floor are administrative and clerical offices. The sixth floor, part of the second, and the basement are used for storage of case lot merchandise. The entire fifth floor is maintained as a laboratory.

Under the old system, open stock was maintained on both the fourth and third floors, and the first floor was used for shipping. Orders for open stock were filled by progressive picking. Fleets of wheeled carts would be moved along the rows of shelves where workers assigned to certain groups of shelves would pick the merchandise and then pass the cart to the next group of workers. When carts reached the end of the floor, contents were checked, packed and sent to the first floor for shipping.

This system had several inherent disadvantages that took extra time and effort:

First, order handling was subject to delays because
(More on next page)

ORDER-PICKING SYSTEM

Continued



PACKING line on 2nd floor. Completed baskets arrive from 3rd on sloping conveyor; dispatcher, not shown, places proper size carton in basket; and shunts it onto live roller unit beside packing tables.

carts did not travel in a straight line. As there sometimes were several hundred individual carts on the floor at one time, supervision was difficult. Supervisors were handicapped in spotting incipient bottlenecks or in tracing the progress of a specific order.

Second, since the stock was maintained on two floors, individual orders frequently were assembled—filled, checked, and packed—in two parts. The separate parts were then sent to the shipping floor for consolidation. This split arrangement caused extra handling and shipping time on many orders, reducing the efficiency of the overall operation.

All Operations Now Conveyorized

The new plan, which evolved from studies of handling systems that would produce the desired results,

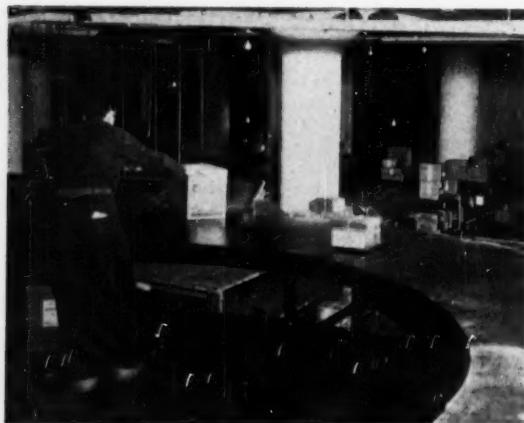
included maximum possible mechanization.

All operations that could be are now conveyorized—with a continuous-flow, multi-story system of connecting roller and belt conveyors. Outstanding features will be described, but, first, here is what has been generally accomplished.

Orders move in a steady flow through three floors; open stock orders are filled entirely on the third floor, packed on the second, and shipped on the first. From the time an order is received for processing on the third floor until it is inside the delivery truck, it travels continuously on a conveyorized production line. Each order travels a fixed route through the plant, yet the system is flexible enough to handle rush orders without interfering with normal operations. Bottlenecks can be spotted and remedied as soon as they occur. Since orders are worked on in turn, and baskets never leave the line, none can be overlooked or mis-routed. Supervisors can locate any given order on the line within a few minutes.

Open stock orders start life with an order list and an empty basket at the beginning of the conveyor line. As the basket moves along the conveyor, various items on the order are placed in it by order fillers who cover specific groups of shelves along the line. When the basket completes its tour of the third floor, the order is full.

The completed order passes by chute to the second floor where, still on roller conveyor, it arrives at a central dispatching point. Here, the dispatcher places a carton of appropriate size in the basket and shunts the basket on to a conveyorized three-level packing line. The packers, 19 in number, slide the loaded baskets on to packing tables directly adjacent to the line, and pack the carton using supplies of excelsior and sealing tape at each table. They then place the empty basket on the upper tier of the three-level con-



SORTING ring on shipping floor. Cartons from packing arrive extreme right foreground, are distributed to 1 of 20 roller conveyors to truck route tracks.



LIFT brings empty baskets from packing line to feed onto return line (upper left). Production manager points to safety interlock which prevents overload jams.



INCOMING case lot stored on 2nd floor. Cartons from receiving room pass over lift bridge to belt conveyor. Movable deflector shunts them to portable roller unit.

veyor which, by a combination of powered and gravity conveyors, returns the basket to the starting point of the line on the third floor.

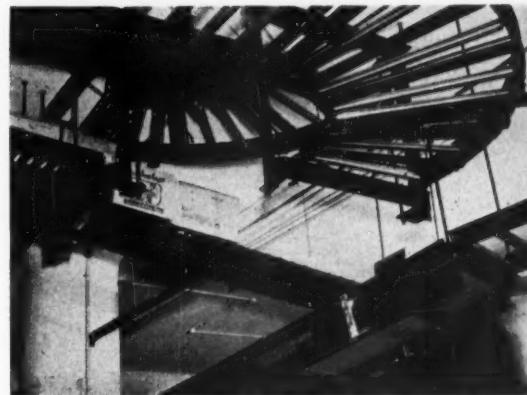
The packed carton, with addressed order attached, is placed on the lowest tier of conveyor, which carries the cartons through the floor to the shipping area below. Cartons are received by gravity conveyor at a semi-circular sorting ring, where attendants, working from the address on the carton, dispatch them via roller conveyor to one of 20 shipping docks. Each dock is reserved for orders destined to a specific area of the city. Orders are arranged at the dock and loaded onto delivery trucks, via extensible roller conveyor, in inverse sequence of delivery.

Time-Saving Features

On the Third Floor: The flow of merchandise is from central areas on the floor toward the conveyor line, thus simplifying restocking. Because of the arrangement of shelves with respect to the conveyor line, order fillers rarely take more than a dozen steps per "pick".

To expedite the filling of orders, a special order blank was devised. Mail and phone orders are sent, via pneumatic tube carrier, from the seventh-floor administrative offices to the order desk on the third floor. There, the order clerk enters on the form the various items beside letters that indicate the group of shelves where those items are stocked. In this way, the order filler has only to look for entries opposite his section code letter. He wastes no time looking through a list of items that do not concern his section.

A feature of this floor is the way in which space was utilized to provide both maximum storage space for the 20,000 items in stock and ample facilities for filling orders at a high rate. To meet both requirements, an H-shaped conveyor line was devised. Stock shelves are ranged along both the outside and inside of the line. The line is a double-decked arrangement. The upper level is waist high; the lower level is knee



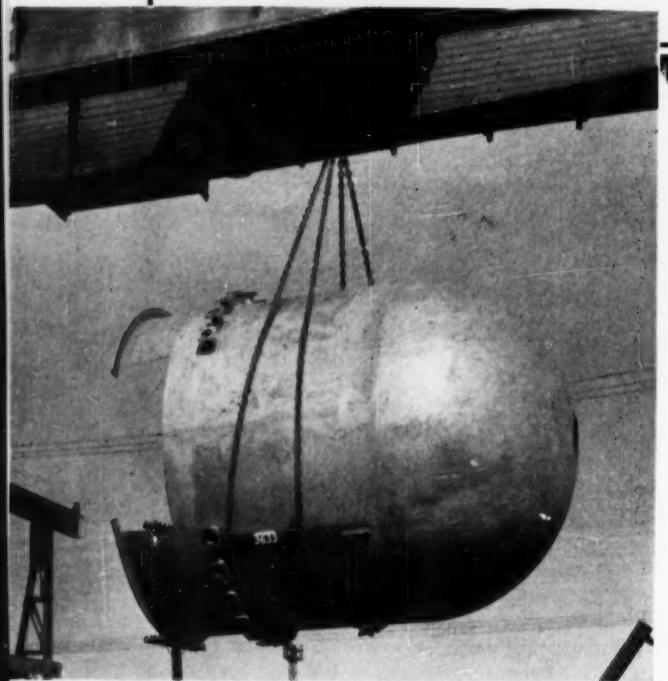
BRIDGE section enables trunkline to serve two areas of 2nd floor. Raised, conveyor replenishes background stock. Lowered, unit serves area in picture above.

high but staggered outward from the upper conveyor for easy access. This two-level arrangement makes it possible almost to double the number of orders in process with little increase in floor space. Equally important is the fact that in case one line is held up by a heavy work load in one or two sections personnel can work on the other line without losing time.

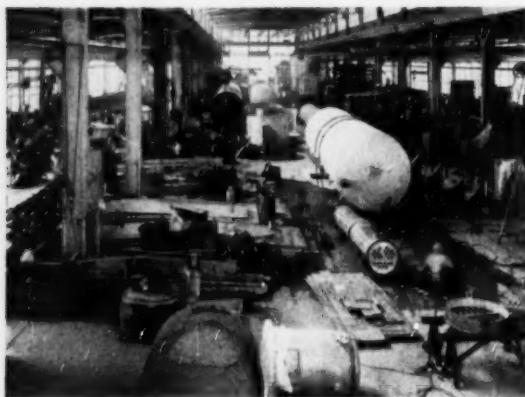
The flexibility of the system is further increased by live roller conveyors that run beside the lower roller conveyors. These live rollers are express lines. Whenever an order is completed after a basket has traveled only part way through the line, the last picker sends it via express directly to the packing line on the floor below. In this way, many orders—possibly 20 per cent of the total—do not have to make the entire circuit of the stock floor. Not only does this rapid clearing of orders speed up shipment but it also permits the order starter to take full advantage of the

(Continued on page 124)

Bridge Crane Coordinates Heavy Handling System



COMPLETED PRESSURE VESSEL is carried by bridge crane from final processing in sand blast room to open rail car for shipment to customer.



EVERY INCH OF SPACE is utilized in Colonial's center bay which receives vessels from side bays.

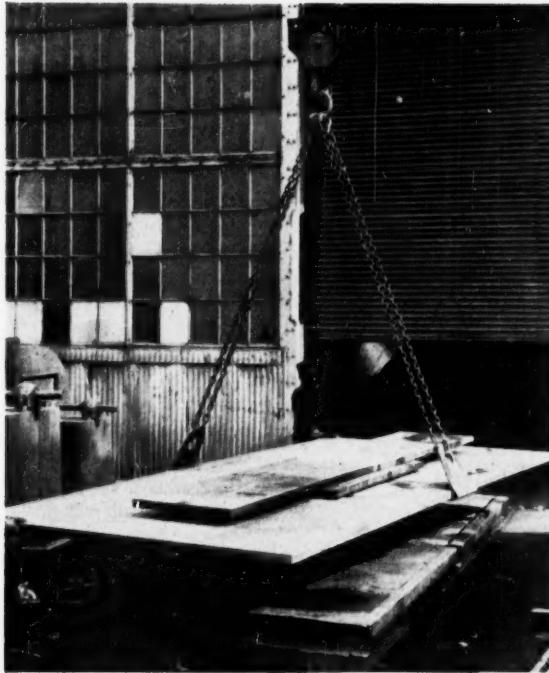
PROCESSING of huge, heavy, awkward items presents no problem, if good material handling principles are applied and proper equipment application is adhered to. The Colonial Iron Works Company of Cleveland, for instance, daily handles items up to sixty feet long, over twelve feet wide, and weighing as much as 24,000 pounds.

A private railroad siding, adequate truck access and extensive yard storage are provided at Colonial's plant, which is located on a tract 171 feet wide and 708 feet long. The main plant consists of three bays, each of which is 400 feet long. The east bay of the plant is used for structural fabrication and the west bay for plate fabrication, while the center bay handles final stage processes such as assembling, testing and inspection.

This layout permits incoming materials to enter the plant and be transferred to either of the side bays, according to the fabrication required. Stock material is most often supplied from the yard storage area, which is located at the north end of the building. All general yard handling, as well as loading and unloading, is performed by a 15 ton capacity traveling bridge crane which is 68 feet wide and operates on a runway 150 feet long.

Loads which must be moved from the yard to the plant are spotted by a crane on one of two all-steel transfer cars which operate on standard gauge railroad tracks. The cars are easily moved through doors inside the plant, thus providing a connection between the center bay and yard bridge cranes, which was previously impossible because of the difference in widths of the cranes. Since the transfer between the yard and the plant is on an intermittent basis, the costly process of changing the entire crane installation has been eliminated by the rugged, flanged wheel carriers.

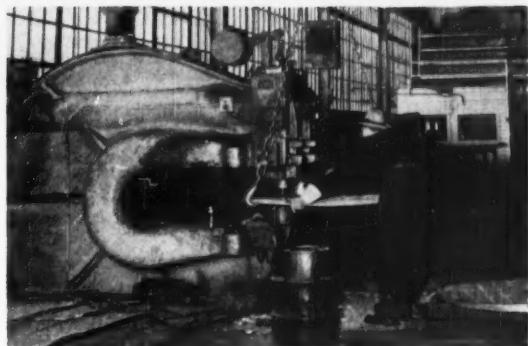
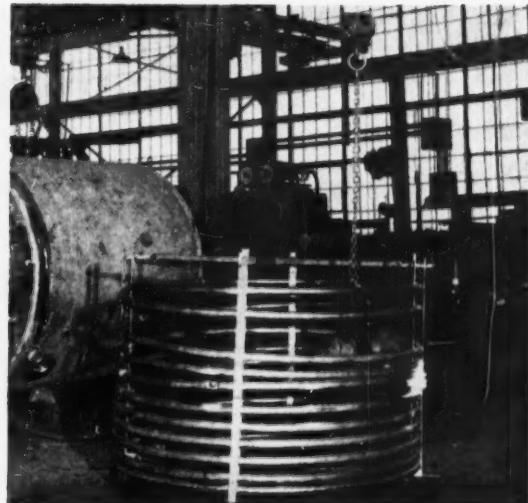
As with the yard, the plant itself is served by an extensive network of overhead handling equipment which covers practically 100 percent of the plant area and has resulted in an almost total elimination of manual effort. In the center bay are two ten-ton ca-



HEAVY SHEETS of raw materials are handled by crane located outdoors (top). Other cranes, inside, coordinate efforts of yard crane, reduce manpower.

IMPORTANT COMPONENTS are fabricated for the alloy vessels. Jib cranes help worker (top right).

LITTLE EFFORT is required by worker, as jib crane helps processing through plant (right).



pacity bridge cranes which operate on a 400-foot track. Both have a 51-foot span with 24 feet of clearance beneath the crane hook. The west bay is served by five floor operated bridge cranes, while the east bay uses four of these units. These cranes, which are of two and three-ton capacity, also operate on 400-foot-long runways.

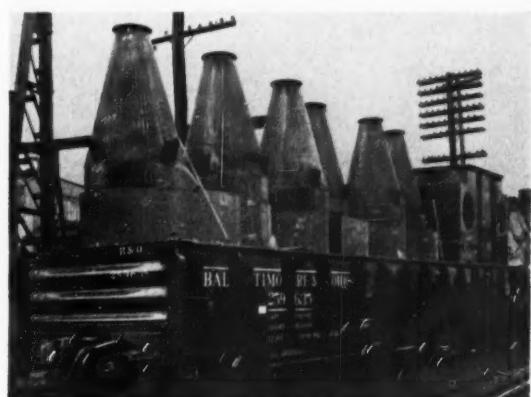
In addition to the overhead equipment, the company has installed 24 jib cranes of two-ton capacity, which are spotted at designated points throughout the area. Many jibs are positioned next to machines to spot loads for such operations as shearing, punching, planing and burning. Others are located at columns between the side bays and the center bay and serve rolls and brakes in the area. They are also used to transfer loads between bays to points where they may be handled by the traveling cranes.

Since the rolls and brakes are located so that material is fed to the machine from the side bays, emerging when fabricated into the center bay, a forming operation also doubles as a transfer operation, thus reducing handling effort and cost.

An interesting feature of the company's material flow is the use of certain machine tools as "portable" equipment. Such tools as throatless shears, saws, small furnaces, etc., are moved to the work by the overhead handling equipment. The large, bulky nature of the

work in comparison to the smaller size and ease of handling the machine tools dictated this unusual practice which has saved tremendous numbers of rehandles, unnecessary backtracking and physical effort.

When machining is complete, the in-process work is sent through rolls or brakes, or directly to fitters in the center bay for final assembly, testing and inspection.



CORROSIVE RESISTANT VESSELS, loaded by crane, are speeded by freight cars to destination.

A Practical Manual of *Material Handling Procedure*

Installment 5

Section 6: THE STANDARDIZED IN-PLANT CONTAINER

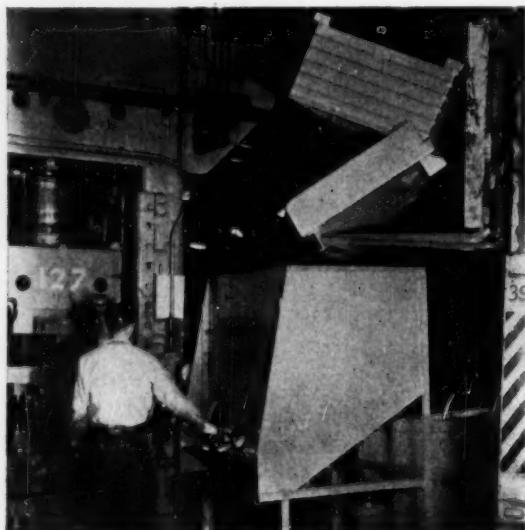
By W. B. McClelland

THREE are, of course, few operations where the full pallet, or container of equivalent capacity, remains the standard unit load from start to finish. More likely than not, the load must be broken up after it is received, and almost surely it is reduced or rearranged in the process of manufacturing or distribution.

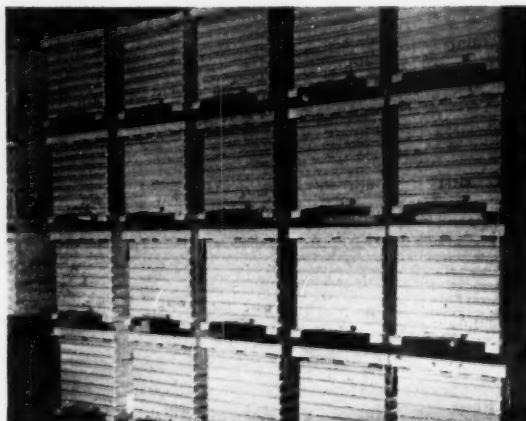
However, as mentioned in the last section (August installment), if the dimensions and capacities of containers are coordinated so that a given number of the smaller containers produces a larger, unitized package, the standard unit load principle and its inherent economies are preserved.

To obtain this condition, there are numerous tote pans, trays, baskets and boxes on the market. These come in standard sizes and shapes, or they can be

made to suit given requirements. Many of them can be stacked. Standard racks are provided for use with some. Materials of which they are made include sheet-metal, wire, expanded metal, plastics, hardened fiberboard, wood, corrugated board combinations. Frequently, the container is designed so that it is easy to inspect contents without moving the unit. Usually, these containers are built for handling by powered or manually operated lifting equipment. Many are made small and light enough for manual lifting even when full of heavy parts. A number have been designed for conveyor systems. And there are occasions where a container is intended to be handled by every type of equipment—through every kind of plant operation. Vendors sometimes supply materials in a plant's standard container. In short, a standardized tote box can



DROP-BOTTOM metal boxes tier compactly for temporary or permanent storage, allow fork truck handling and easy dumping into work-level hoppers at machines.



be made to serve in the transit, process and distribution phases (see Installment 1).

Seven Advantages in Standardization

Let's look at the results of the establishment of a standard unit container in the plant.

1. *It is probable that each handling move will include more material than before.* Especially in the handling of parts or sub-assemblies, a load is not likely to consist of a partially filled, oversized container. Rather, it will probably involve a number of smaller containers. These may be completely filled with parts of the same kind; completely filled with parts of different kind in each container; or partially filled with parts of different kind in each container. The load might be intended for delivery at one stop or at a number of stations on a route. The important thing is, a maximum pay-load is involved, and trips and labor are thus both saved.

2. *Space is saved.* Because, with smaller containers, parts and materials can be consolidated into less space, total storage area requirements are minimized. A mixed assortment of containers usually cannot be stacked interchangeably. Standard containers can.

3. *Damage is minimized.* Parts do not have to be shifted from one container to another, or consolidated into large units. They need not be handled individually as loads are made up. Standard containers which can be moved from storage to machines cut out at least one handling, at least one opportunity for damage.

4. *Rotation is maintained.* First-in-first-out issuance of materials and parts is easy with tote trays, boxes, or baskets. Containers can be stocked and issued according to date or code noted on identifying tag. With

large containers or other big-volume means of storage, it is difficult to maintain proper rotation without excessive handling and rehandling.

5. *Inventory is simplified.* Counting by unit load is not only easier but is also frequently more accurate, the latter especially when small parts are involved.

6. *Adaptability is high.* Any height or shape of storage area, all sorts of odd corners, balconies and odd spots can be filled with assemblies of smaller containers. In-process handling and storage, at machines, is simple if the tote boxes stack easily. Mobile storage of sub-assemblies or parts can easily be arranged to suit production demands.

7. *Cost is low.* Whether a firm designs its own unit container or can use one that is available as a standard, or modified standard, the outlay need not be very high. The system also allows expansion at low cost since no part of the installation is permanently attached to the plant structure. The system can be extended as the plant requires.

Basically, the advantage of the tote box storage system lies in its flexibility, whereby it breaks down any stock into components which can be handled—and controlled—readily, quickly, mechanically, and in standardized, efficient quantities.

The System in Operation

A run-down of a suggested operation will show how the system could be worked to best advantage.

Upon receipt of large quantities of, say small castings, they are taken from the standard shipping pack and put into the plant's unit containers. Weight is held to 50 pounds or less so that manual lifts, when required, can be made. If women are likely to handle

(More on next page)



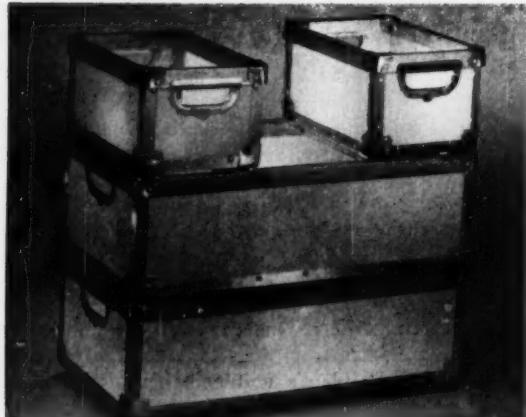
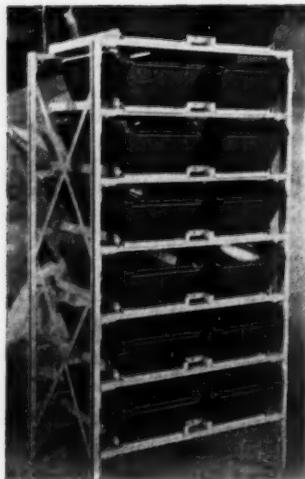
LIGHT-WEIGHT stackable, reinforced wooden skid boxes handle large quantities of small parts.



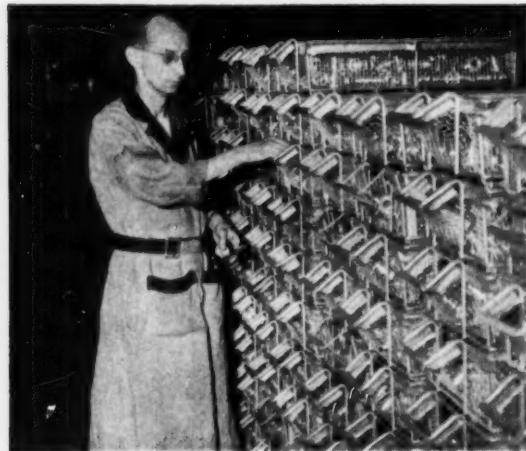
UTILIZATION of odd corner achieved with rack of small containers. Sections can be moved by lift truck.

MANUAL OF MATERIAL HANDLING PROCEDURE

MOBILE storage for warehouse or production area is provided by racks made for metal tote boxes.



FIBERGLASS shop boxes are lightweight, strong, and produced in standard dimensions for unitizing purposes.



WIRE baskets serve for in-process handling as well as storage, offer visibility and protection to parts.

any of the containers, it will be wise to restrict loads of all to a maximum of 20 pounds, or whatever local policies stipulate. (Fifty pounds is too much for a man to handle these days, anyway.) The number of items per container is then checked and adjusted to standard where required.

Weigh counting, of course, is most suitable for smaller parts. (Large items of similar shapes can be loaded into containers in regular patterns for instant, visual counting.)

When the count in each container has been made and checked against the receiving ticket or invoice, the container can be marked for ready identification and record purposes. Either a multiple carbon form or tear-off ticket arrangement is suitable for inventory control. The part of the ticket that is left on the container (usually in a card slot or clip provided for the purpose) includes the part name, number, date received, quantity in each container, quantity in total order, location, invoice number, and any other data that might be desired. A tight coordination is thus created for these elements of the firm's stock control system.

From the receiving area, the containers can be transported to the warehouse or production lines, where a supervisor records disposition of material and forwards the data to the production control department.

The record of location is made on the spot. It is not necessary for the stockroom to look for an empty slot in the rack with a given designation. Therefore, placing the material in storage is a fast, efficient operation.

It is obvious, of course, that there would be considerable advantage to the purchaser if the vendor



HIGH mobility for fast handling provided by dollies which hold vulcanized fiber tote boxes in cold storage.

Continued

were to supply parts or materials in the standard tote container. Or, under many conditions, the most economical procedure is for the customer to forward his shop containers to vendors for filling. Weigh-counting or visual inspection would probably be the only activity required prior to placement of the material in the warehouse area.

Requisitions by Container Quantities

Orders for materials to be released from the warehouse should be made by container quantities wherever practical. It is easy for the machine operators and supervisors to keep track of parts and production with this system, which helps in the establishment of realistic work standards and the maintenance of production schedules.

At machines, containers can be used with elevating tables or self-feeding hoppers to feed pieces at work height, eliminate all unnecessary lifting and bending.

Also, there need be no losses in time while operators wait for parts. They can be easily and economically stacked nearby.

Illustrations for this installment were provided by: Bathey Mfg. Corp.; Chas. Wm. Doepeke Mfg. Co.; Fiberglass Box Co., Inc.; Fibre Specialty Mfg. Co.; Jaxon Wire Products Co.; G. B. Lewis Co.; Randolph Metal Prods. Co.; and Union Metal Mfg. Co.

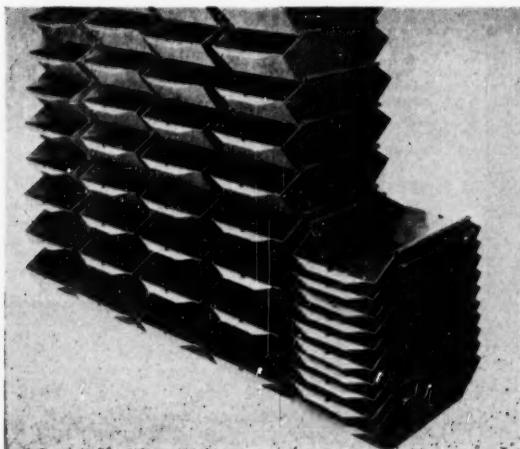
Next month's installment will start the section on in-process handling. It will include forms, and sample analyses, with which plant operations can be critically examined for possible areas of improvement. R. C. Brady will be the author of this next series.



WEIGH counting speeds handling of small parts. Larger ones are placed in pattern for inspection.



STANDARD quantities can be maintained in different size tote boxes for controlled deliveries to assembly.



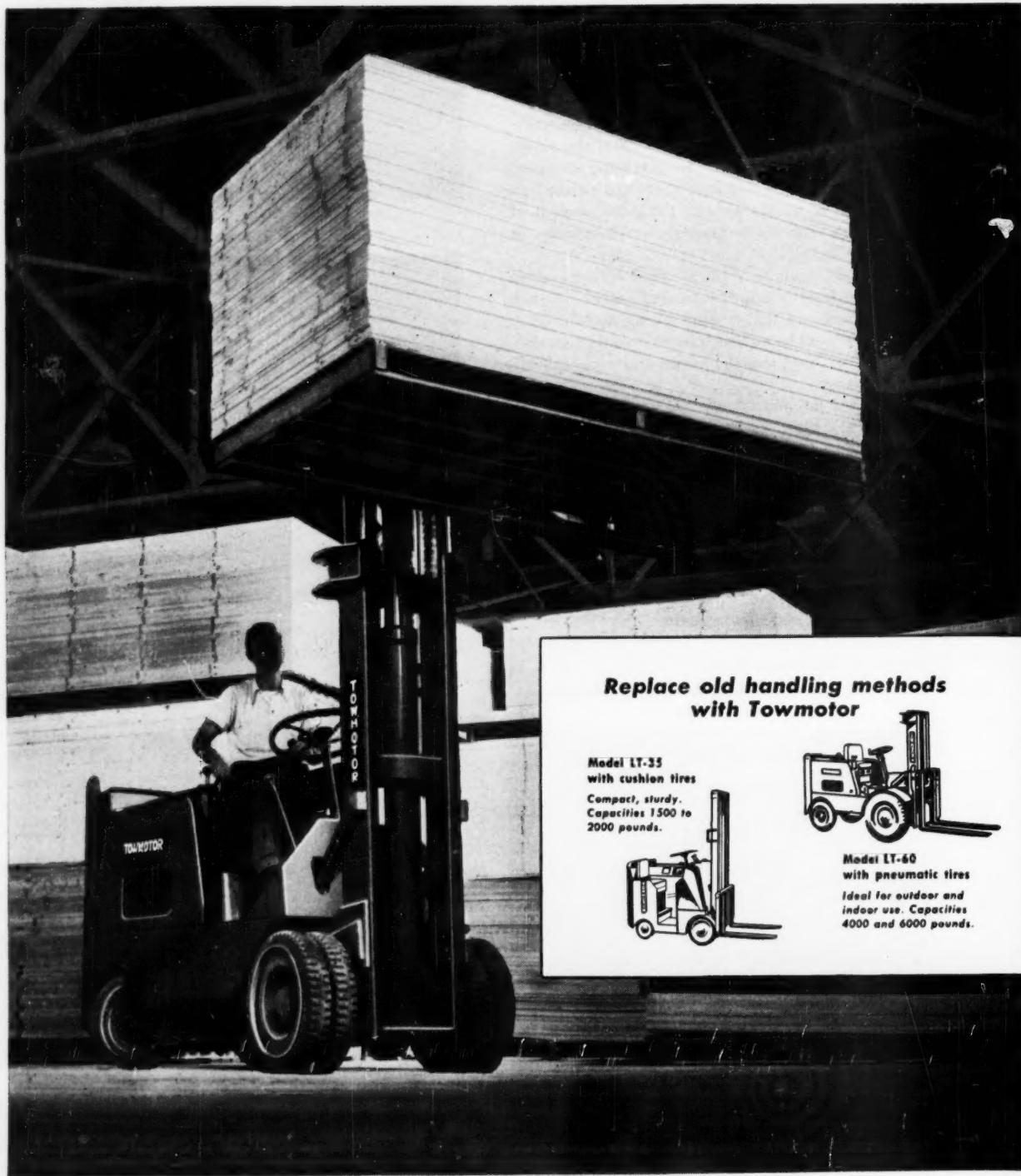
MINIMUM FLOOR space is occupied by nesting-type boxes or baskets. Compact store of empties is handy.



UNIT LOAD principle maintained as number of containers per pallet load can be established and held.

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Get Lower Handling Costs..



**Replace old handling methods
with Towmotor**

**Model LT-35
with cushion tires**

Compact, sturdy.
Capacities 1500 to
2000 pounds.



**Model LT-60
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Ideal for outdoor and
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In addition to regular terms, you can also get prompt delivery of new Towmotor equipment without a cash outlay.

"Lease-A-Towmotor" Plan

The "Lease-A-Towmotor" Plan requires no capital investment and only a small monthly rental payment.

Your Towmotor will pay the monthly rental many times over out of material handling savings. Towmotor users report savings of up to 60% over old handling methods. Advantages include—

- (a) Greater handling efficiency in your receiving, storage, production and shipping operations without capital investment. You pay low monthly rental during lease contract period. No down payment is required.
- (b) Greater handling economies with modern Towmotor equipment. Your business will enjoy the competitive advantages of lower costs.

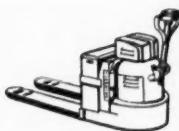
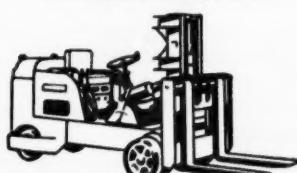
You have a choice of a 3 or 5-year lease. Monthly payments are graduated downward over the 3-year period and are proportionately lower over the 5-year period. Mail coupon below.

TOWMOTOR Time Payment Plan

You can also buy your Towmotor material handling equipment spreading the cost over 6 to 36 months. No outside financing necessary. Towmotor handles complete arrangements. Minimum down payment. Mail coupon below for complete details.

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Model LT-90 with cushion tires
Super powered, extra heavy-duty model. Capacity 15,000 pounds.



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Turn most of your material handling cost into profit! Have a Towmotor Mass Handling Engineer analyse your needs. Let Towmotor solve your material handling problems.

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Cleveland 10, Ohio

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- Towmotor Time Payment Plan
- Have a Towmotor Mass Handling Engineer call

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Legal Protection for Your Ideas

Patents, Trademarks and Copyrights cover three distinct areas in which ingenuity is safeguarded against illegal encroachment. The author, a distinguished patent attorney, takes over Flow's usual patent department this month to discuss the functions and differences of the three types of protection.

By George V. Woodling



PATENTS, trademarks and copyrights cover separate and well defined areas of legal protection, but the differences between these three types of protection are not always clearly understood.

The following definitions point up the distinguishing characteristics of each:

A **patent** is a printed document, issued by the U. S. Patent Office, which gives an inventor the right to exclude others from manufacturing, selling and using the patented invention for 17 years—the life of a patent. Patents are not renewable, but patents for improvement inventions may be obtained.

A **trademark** is a mark, picture or printed word or words (sometimes referred to as the commercial signature) applied to goods of a manufacturer or seller so that the public can distinguish these goods from similar goods manufactured and sold by someone else. A trademark registration is issued by the U. S. Patent Office for a term of 20 years; it is renewable repeatedly for like periods of 20 years as long as the trademark is continuously used.

A **copyright** gives the copyright owner the exclusive right to produce or reproduce his literary or artistic work. It prevents others from copying such works of the copyright owner. A copyright certificate of registration is issued by the Library of Congress (Register of Copyrights) for a term of 28 years and is renewable for another period of 28 years, making a total of 56 years.

Property in a trademark should not be confused with property in a patent. A company may develop a new device and obtain a patent to protect the unlawful appropriation of the construction of the device. It may, at the same time, designate the new device by a trademark and obtain a registration to protect the device from being unlawfully sold by others under the same trademark. The trademark indicates the origin of the goods and does not give any exclusive property right in the article to which the trademark is attached, nor in any invention residing in the article. The right

to exclude others from manufacturing, selling and using a device can be obtained only by complying with the patent laws.

Patents Promote Progress

The purpose of the patent laws is not primarily to reward the inventor; it is to promote the progress of science and the useful arts for the benefit of the public. Every inventor has the difficult task of showing that his invention meets the technical requirements of patentability. He must not only convince the Patent Office of the patentability of his invention but must also stand ready to support the validity of his patent when he sues an infringer.

The Constitution of the United States does not authorize the protection of trademarks as it does that of patents and copyrights; for this reason, a trademark is sometimes referred to as an "orphan" in the law. In a trademark, it is its adoption and use on the goods in commerce that create the rights which the courts protect. The continued use of a trademark by its owner is essential to its validity and right to exclusive ownership.

The Patent Office serves as a kind of clearing house for the prevention of duplication in trademarks. All registered trademarks are placed on file and open to public inspection. An interested party may, by making a search of the records, avoid the adoption of a trademark already taken by another.

An important advantage of a trademark registration is that it entitles the owner to mark his product with the notice: "Reg. U. S. Pat. Off.", or just the letter "R" enclosed in a circle—(R).

Important to Give Legal Notice

Compliance with the marking statute constitutes legal notice to the public that the owner has registered the mark and claims its rightful ownership. It is im-

(More on page 102)

"DO-IT YOURSELF" MAINTENANCE TIPS

from the GOULD Plus-Performance Plan

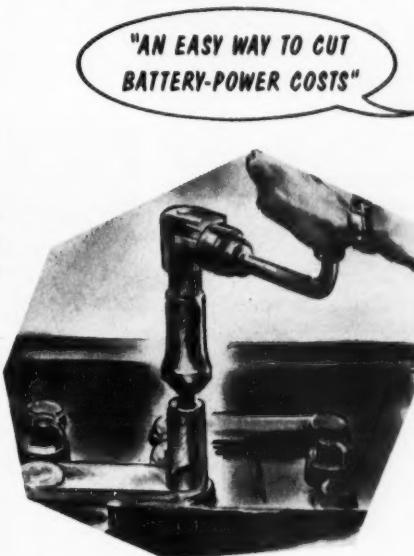
HERE'S MONEY-SAVING MAINTENANCE TIP #1

Accidental damage in even the best regulated operations can put a cell out of commission. Here's a tip from the Gould Plus Performance Plan on how to easily remove and repair a cell.



1. Remove Connectors ▶

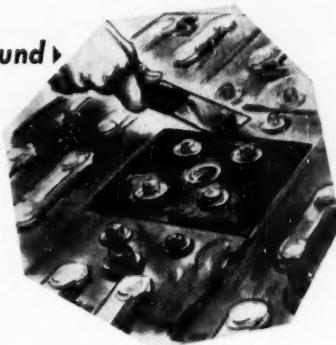
We recommend using a special drill (Gould Part No. 35459C) which allows the cell post to remain by cutting the bond to the lead insert of the cover.



"AN EASY WAY TO CUT
BATTERY-POWER COSTS"

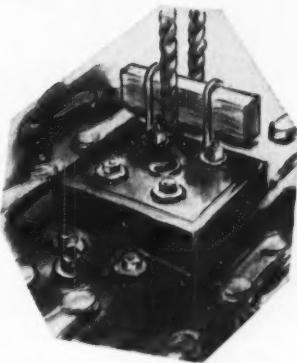
2. Remove Compound ▶

from between jar to be removed and adjacent cells. Use a warm compound knife for this purpose. Pour a little penetrating oil or kerosene mixed with regular oil into space between cells for lubricant.



3. Pull the Cell ▶

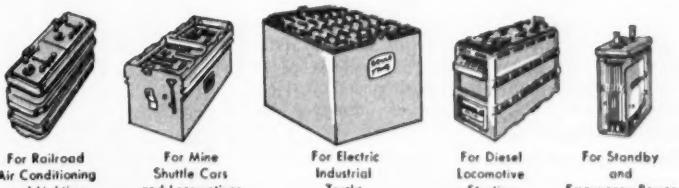
The best way is to screw a Gould Cell Puller (Part Number 77061) to the negative post remaining after drilling in No. 1. Then attach hoist and lift. If a cell has two negative posts, use two cell pullers, attaching the hoist to a piece of wood placed through the cell puller loops.



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TRENTON 7, N. J.

This is only one example of the many helpful service tips contained in the Gould Plus-Performance Plan. For the complete set of published information on battery service and maintenance mail the coupon TODAY.



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(Type or types)

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Firm _____

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BUSCHMAN offers a wide range of types and sizes to cover widely diversified materials handling applications. Gravity roller and wheel . . . live roller . . . powered belt . . . apron . . . overhead cable . . . or special conveyors can be supplied. In addition, BUSCHMAN engineers are prepared to survey your plant and to recommend the most practical, economical and efficient type of conveyor for each installation.

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LEGAL PROTECTION

Continued

portant for all such registered marks to carry this notice. The trademark laws provide that it is the duty of the registrant to give the public notice of the fact that the trademark is registered. Failure to include this notice with the trademark prevents the recovery of damages for past infringement, except on proof that the defendant was directly notified of infringement and continued the same even after such notice was given.

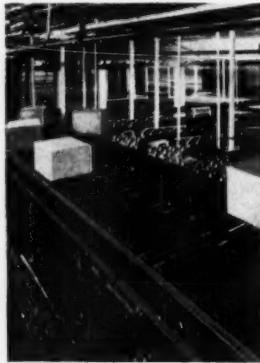
The subject of copyrights is directed primarily to the finer arts, which are afforded protection against copying by others. A partial list of copyrightable material may include books, periodicals, catalogs, lectures, sermons, musical compositions, works of art, models or designs for works of art, maps, photographs, commercial prints and labels, and motion pictures other than photoplays. Copyrights are not to be confused with trademarks, which merely protect an identifying mark or symbol.

A question which arises in this connection has to do with slogans. As a general rule, a slogan cannot be protected by either a trademark registration or a copyright registration. However, if the slogan is used in a trademark sense, it may be allowed the protection of a trademark registration. "Be Sure With Pure" gasoline is an example of a slogan, used in a trademark sense, which has been granted protection by the Patent Office.

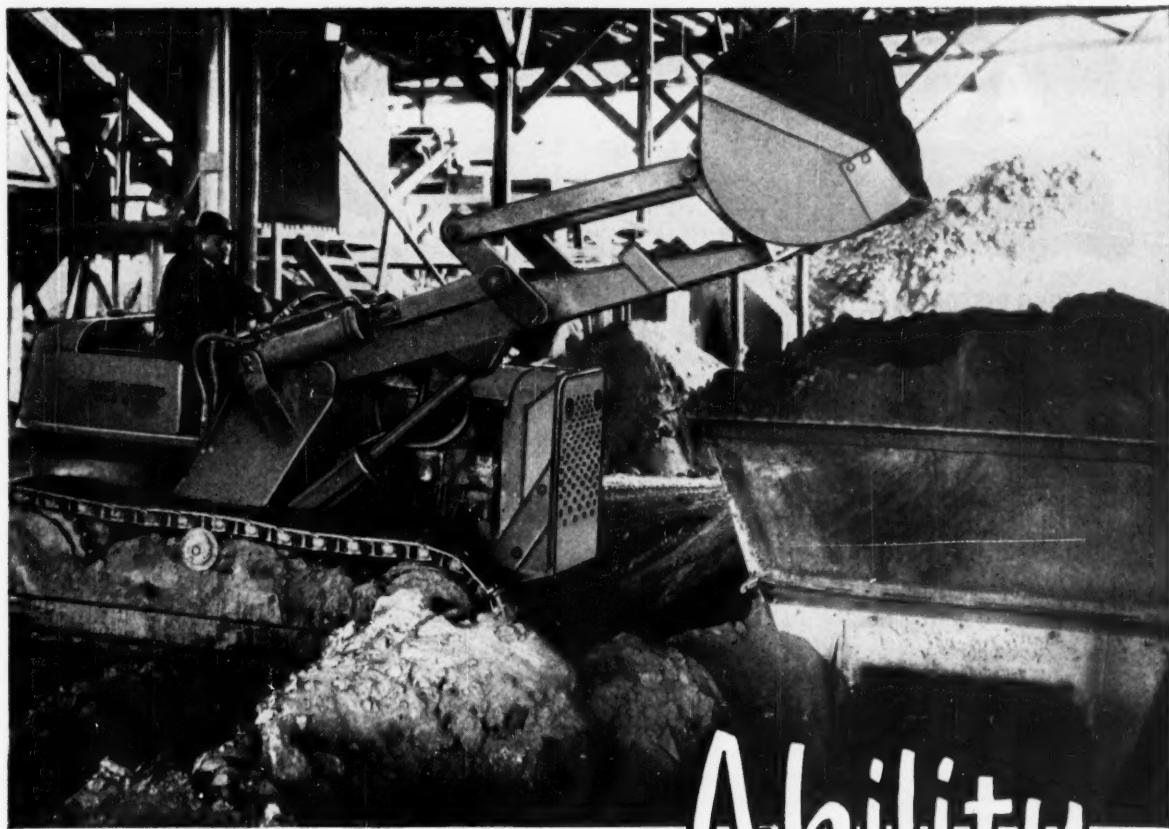
To apply for a copyright registration a person may write to the Register of Copyrights, Library of Congress, Washington, D. C., for information and the proper copyright form for the particular material he wishes to register. This service, including the information and the copyright form, is free of charge.

As stated before, material which is to be registered as a copyright must *first* be published and must bear the notice of copyright. "Copyright (year) by (name of copyright proprietor)" is a proper copyright notice. After the materi-

BUSCHMAN-designed switch and spur sections provide maximum versatility.



Typical combination system utilizing live rollers and gravity wheels.



can you match this Ability with any one machine?

Ability to dig The Allis-Chalmers HD-5G Tractor Shovel is not merely a loader. It is a powerful excavator. It can dig into clay, break up and load hard-packed bulk chemicals. Bucket teeth and rear-mounted hydraulic ripper attachments are available to speed tough excavating jobs.

Ability to load fast With its big $1\frac{1}{4}$ -cu-yd bucket — and the power to crowd it full — the HD-5G keeps loading and stockpiling jobs moving at peak production. Two-yard light materials bucket is available for snow, coal, and other light materials.

Ability to maneuver—in close quarters. It takes a crawler tractor to utilize such power and capacity in such a small space. The HD-5G pivots around within its own track length. Special high-speed reverse adds further to output on short-cycle jobs.

Ability

Ability to handle any load A wide variety of front-end attachments may be quickly interchanged with the standard bucket. Included are Lift Fork for packaged and palletized loads, Bulldozer for stripping and stockpiling, Crane Hooks for machinery and other heavy, solid objects, special Rock Buckets and Rock Forks. Drawbar is always available for heavy hauling jobs.

Ability to work anywhere any time

The HD-5G has stability to work safely over rutted or uneven ground . . . traction and flotation to travel through snow, mud, sand where rubber-tired equipment cannot operate. It is the ideal machine both for materials handling and yard maintenance jobs.

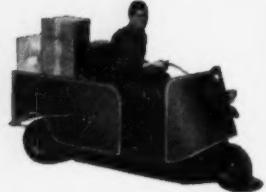
Write for literature or ask your Allis-Chalmers dealer to tell you more about the versatility and flexibility of the HD-5G. Let him show you how its ability to switch from job to job — and to do each one well — can save you time, labor and specialized equipment.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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MOVING PERSONNEL



HAULING LIGHT MATERIAL



TRANSPORTING SUPPLIES

Autoette has designed especially for American industry two electric pickup trucks that provide a new approach to light materials handling problems . . . the $\frac{1}{4}$ -ton pickup, ideal for moving personnel — maintenance men, watchmen, mail girls . . . the $\frac{1}{2}$ -ton truck for tools, supplies, equipment. Both are the last word in efficiency, safety and economy. Send for free information on how Autoette serves your industrial needs.

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World's Lowest-Cost
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AUTOETTE, INC. Dept. 1194

730 West Esther, Long Beach 13, Calif.
Please send me information on how Autoette pickup trucks can serve my particular industry.

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104

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Continued

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No Cure for Past Defect

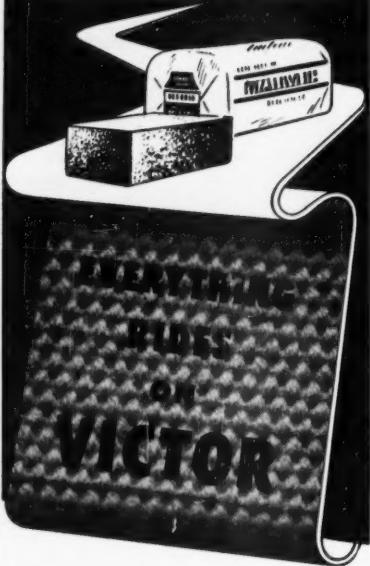
There is a general misconception that the copyright proprietor has no legal right to apply this notice of copyright upon his material until he has obtained the copyright registration. This assumption is incorrect. It is a legal requirement that the notice of copyright be printed upon the material to be copyrighted as of its first publication and before mailing it to the Copyright Office. Unfortunately, when copies have once been published without the copyright notice, there is no legal way of securing a registered copyright for the work. Even the addition of a subsequent publication bearing the correct copyright notice will not cure the defect of a prior publication without such notice.

Rights of Inventors

It should be remembered that the incentive to create for the promotion of industrial progress is greatly stimulated by the assurance that the thing created can be protected as a valuable property right. This protection of the property rights of inventors is fundamental to our industrial growth. In recognition of this fact, the law has characterized patents, trademarks and copyrights as industrial property, which is the source of our greatest wealth. As in the past, the power to invent and create new things will control the future. The extent to which industrial property may grow—although it is beyond our ability to comprehend its vastness—will be proportional to the degree of protection afforded by the laws, and to this extent an even greater emphasis will be placed upon patents, trademarks and copyrights.

From the flow of ideas which are protected and made practical by patents, trademarks and copyrights come better living, a stronger nation, freedom, and jobs.

FROM BREAD TO BRICK



Bakers depend on specially engineered Victor conveyor belting for sanitary handling that cannot mar the smooth surfaces of their product. Building supply men know that their specialized Victor belting is tough enough to stand up to the weight and roughness of brick. The answer to your conveyor problem is probably a Victor product, too.

Victor, you see, manufactures the most complete line of textile belting in America. The many Victor engineering belting styles include solid-woven, canvas-stitched, neoprene and balata types in an unmatched range of widths and thicknesses. Standard and special coatings and impregnations adapt untreated belts to hundreds of specialized uses.

One of the hundreds of possible combinations of weave, thickness and treatment may be just the belt you need for your conveyor system. It pays to check with Victor before buying any belting product.

*Write today
for full information.*

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FLOW • SEPTEMBER, 1954

Introducing the Brand-New **OLIVER SUPER 55**



*the all-new,
all-purpose tractor
with everything!*

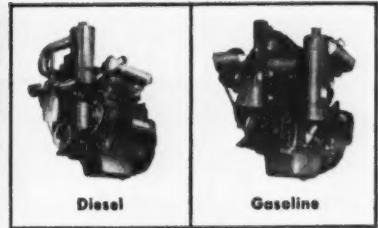
Here is the tractor you have been waiting for. A tractor with all the features you have wanted...all the features that make other tractors its size out-dated! Waiting for diesel power? Super 55 has both diesel and gasoline. Want a tractor you can use anywhere, with any kind of attachment? Try the Super 55...its greater power, weight...its compact, maneuverable size...and its ability to take front-, rear- or side-mounted tools gives you versatility never before had in any tractor!

*See and drive the new Super 55. Stop in at
your Oliver Distributor, today!*

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois



a complete line of industrial wheel and crawler tractors



**Takes all equipment—
front—rear—or side-mounted!**

The built-in hydraulic 3-point hitch on the Super 55 operates a wide choice of Oliver and other simple, low-cost tools. Its husky, one-piece frame makes a convenient, solid foundation for front- or side-mounted equipment.

**Most powerful
tractor of its type!**

Not only the most powerful, but a huskier, heavier tractor and the only one to offer a choice of diesel or gasoline power. Two modern, low-friction, 4-cylinder engines designed to keep your costs at an absolute minimum.

SIX FORWARD SPEEDS—with a new super low of $1\frac{1}{2}$ miles per hour. Gives greater power at slow speeds, less chance of engine stall-out.

LOW AND COMPACT—only $4\frac{1}{2}$ feet high. 6-foot wheel base makes tight turns easy in close quarters.

BUILT-IN HYDRAULIC SYSTEM—internal control for 3-point hitch equipment. External control for mounted equipment.

DOUBLE-DISC BRAKES—give four times the braking surface, yet require half the foot pressure of band brakes.

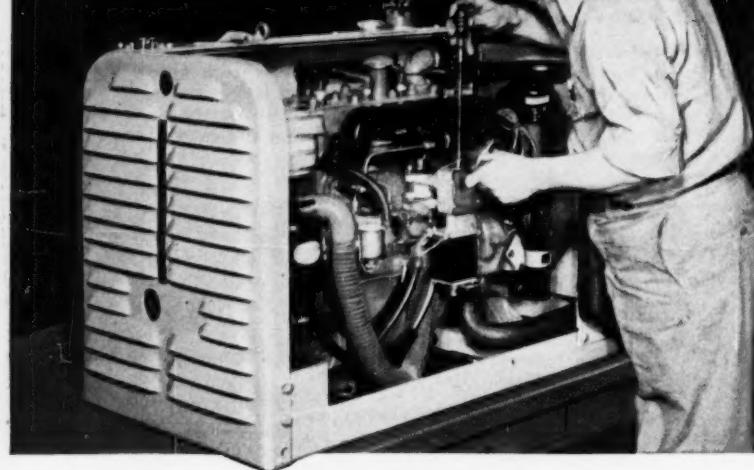
EASY STEERING—recirculating ball-type steering reduces operator fatigue. Makes steering in soft ground much easier.

INDEPENDENT REAR PTO—constant-running power take-off is independent of tractor clutch. No power breaks when shifting gears!

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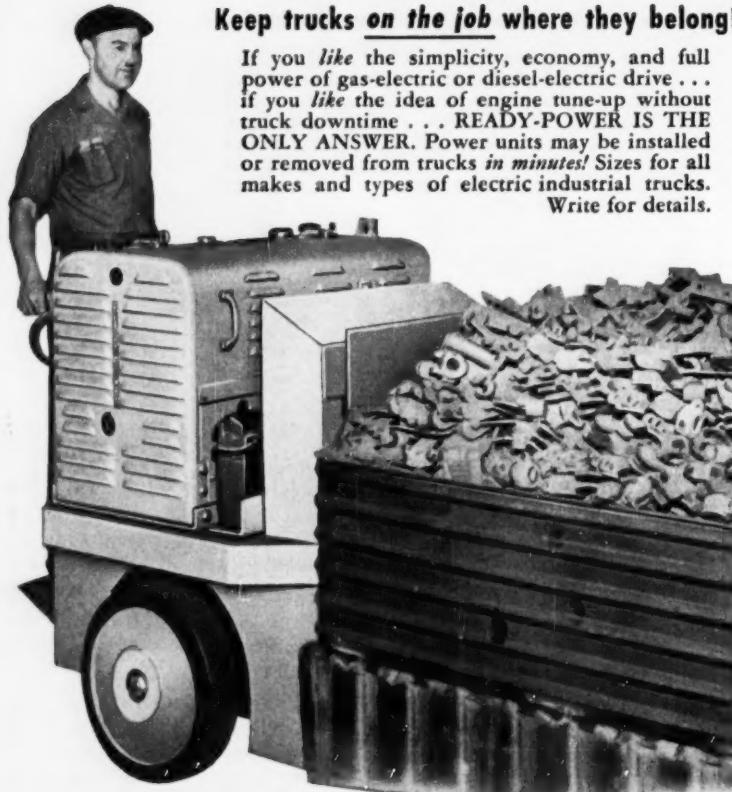
Removable Ready-Power Units

give you
off-the-truck
maintenance



Keep trucks on the job where they belong!

If you like the simplicity, economy, and full power of gas-electric or diesel-electric drive . . . if you like the idea of engine tune-up without truck downtime . . . READY-POWER IS THE ONLY ANSWER. Power units may be installed or removed from trucks in minutes! Sizes for all makes and types of electric industrial trucks. Write for details.



READY-POWER

The READY-POWER Co., 3838 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

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WHITE COLLAR FOUNDRY . . .

(Continued from page 79)

To bring the benefits and advantages of the shell-mold process to the greatest possible number of foundries, however, a fast and efficient single-station machine was needed. One, two or three of them in a battery would surely prove most widely useful.

The ideal single-station shell mold equipment would, like its big brothers, be as completely automatic as possible. It should turn out molds of the same thickness time after time. It should be quick, positive and sure in operation. It should be flexible and adaptable to the needs of changing production schedules.

The single-station unit we have designed isn't the only single-station shell mold equipment on the market today, of course; there are probably dozens. But, since I know more about our own machine than I do about any other, I can describe it in more detail, tell the reasons why it is built the way it is, and show many ideas which are incorporated to assure maximum uniformity from automatic operation.

About the Equipment

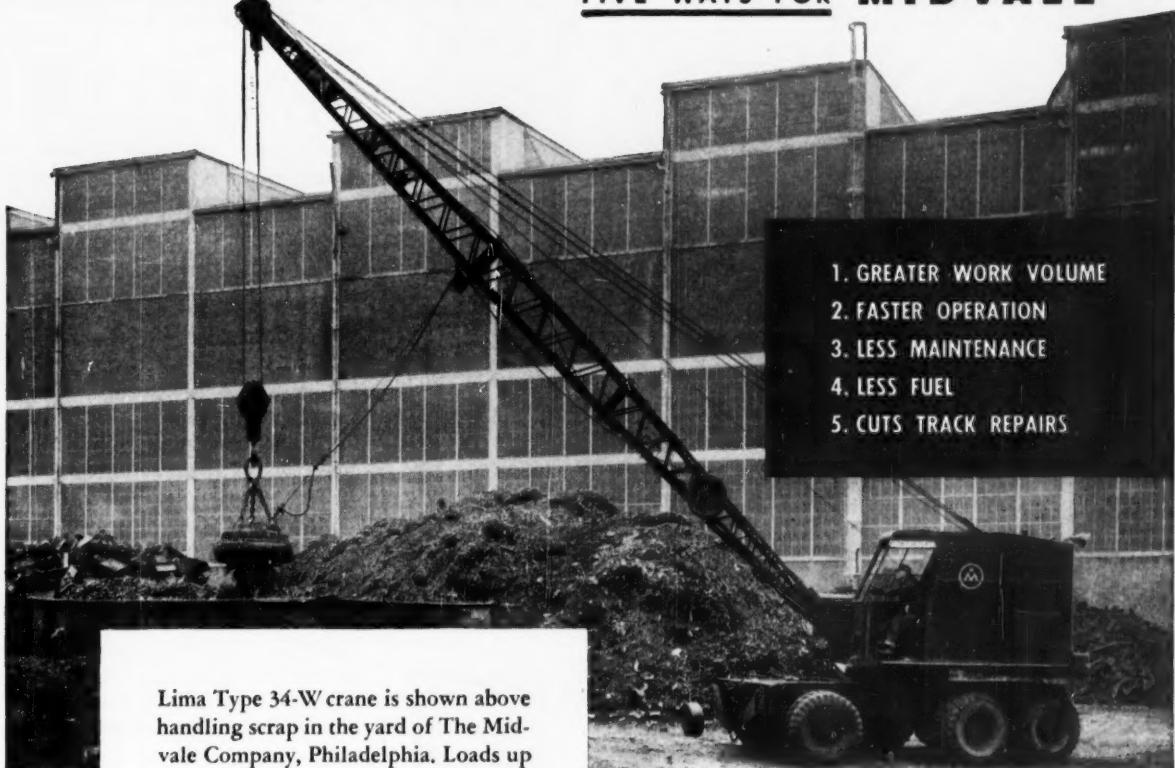
Our single-station equipment is capable of turning out 40 shell molds of average thickness (3/16 to 1/4 inch thick) per hour—the same relative rate as that obtained in the continuous operation of the 12-station unit. Pattern size is 22 x 28 inches, but molds of smaller size can be made by including metal dividers in the pattern plate. The shell mold can then be broken by hand into two or four sections.

The machine is 9 1/2 feet long, 7 1/2 feet wide, and 7 1/2 high. The main elements are the control panel, the oven, the sand and resin dump box, the pattern assembly, and the gear segment and drive covered by the housing.

Push buttons start the cycle, and all operations, up to removal of the cured mold, are automatic. The three main operating cycles, which take place in response to one push button are: (1) the dump cycle, in which sand is deposited on the pattern; (2) the

LIMA

CRANE CUTS COSTS FIVE WAYS FOR MIDVALE



Lima Type 34-W crane is shown above handling scrap in the yard of The Midvale Company, Philadelphia. Loads up to 20 tons are lifted easily by this rubber-mounted crane which can roam everywhere around the plant.

1. GREATER WORK VOLUME
2. FASTER OPERATION
3. LESS MAINTENANCE
4. LESS FUEL
5. CUTS TRACK REPAIRS



We've just received a letter from The Midvale Company, Philadelphia, Pa. Since it tells so well how you can cut costs by switching to a Lima crane, we'd like to give you some key quotes from this letter:

1. "Our Lima crane does the work of two locomotive cranes, enabling us to scrap one and use the other only as stand-by equipment. This mobile crane's great maneuverability permits us to operate in areas previously restricted to available trackage. Also we've found many uses for it in construction projects and in handling materials within various buildings.
2. "Its faster operation has saved many hours 'on the job.'
3. "We find the maintenance on the Lima crane is considerably less than previously experienced on the other type crane. That's due principally to the simplification

of running gear and the resultant decrease in number of parts which might require attention.

4. "Our records show that the unit cost in fuel consumption is not only less in the Lima crane during its actual operation, but even far less when you consider the greater work which can be done.
5. "In some plants using the locomotive type crane, track repairs and maintenance are a considerable item especially if they run no other railroad equipment."

In addition to cutting materials handling costs in these five ways, their Lima benefits Midvale in a way that is hard to measure in dollars and cents. Midvale reports: "Perhaps the greatest importance of the mobile crane is found in the preference of our engineers to operate it rather than our old type crane. This factor makes for better employee relations."

For more information on Lima cranes for materials handling, check with your nearby Lima distributor or write us for latest bulletins on 20, 25, 30, 35 or 45-ton cranes-on-rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

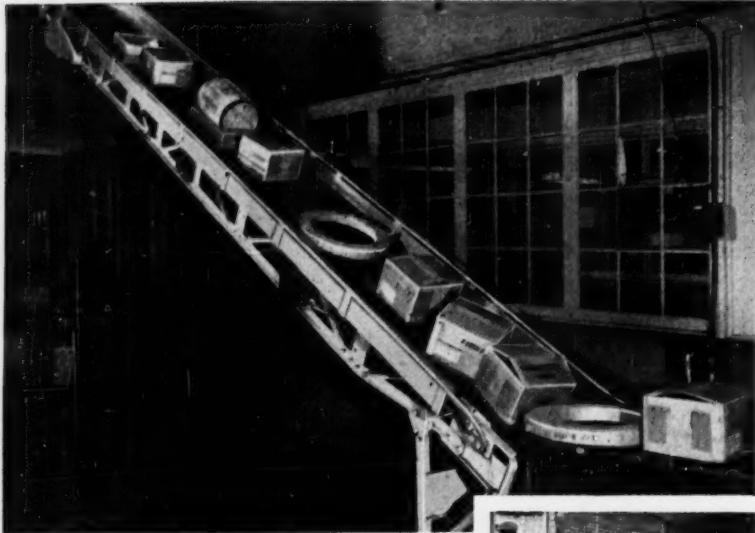
LIMA
SHOVELS • CRANES
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BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
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Construction Equipment Division

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FLOW • SEPTEMBER, 1954



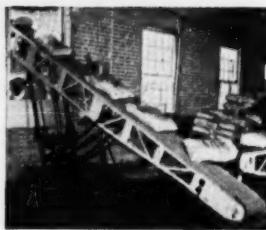
Typical packaged-materials-handling installation. Farquhar Conveyors stack, pile, store or move packaged materials from floor to floor faster and easier... make elevators unnecessary... cut your materials-handling costs to the bone.

You Name It... We'll Move It!

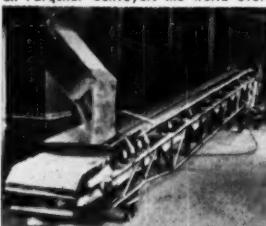
Sure, there are probably some things that Farquhar Conveyors can't handle—like elephants, or battleships. But by and large, no matter what your conveying problem, Farquhar Conveyors can solve it. AND solve it at the *lowest cost, greatest possible efficiency, and smallest possible upkeep!*

Big claims? Sure! But Farquhar can back them up! Case histories in our files prove that Farquhar Conveyors are designed better, stand up better, and deliver greater efficiency and versatility. If you'd like to read about some of these success stories, mail the coupon below for your free copy of "Owners Report."

Your particular problem may be similar or radically different from those in this booklet. Regardless, the same Farquhar experience, know-how and engineering skill that solved problems for people all over the world... can solve yours! A note on your letterhead will bring a Farquhar sales-engineer on the run—at no obligation, of course!



Bags of everything from fertilizer to cement move rapidly and continuously on Farquhar Conveyors the world over.



Bulk materials—chemicals, sand, stone, etc.—present no problem when they're handled by Farquhar Conveyors.



A complete line of Farquhar Roll-Free roller and wheel conveyors let gravity do the work for you!



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AND
GRAVITY
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FREE! "Owners Report"—a booklet of case histories of money-saving conveyor installations.

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**THE OLIVER CORPORATION
A. B. FARQUHAR DIVISION
Conveyor Dept. S-06, York, Pa.**



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Please send me my free copy of "Owners Report."

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WHITE COLLAR FOUNDRY

Continued

cure, during which the mold is baked; and (3) stripping the mold from the pattern.

In some instances, and for certain patterns and molds, it is desirable to use a pattern pre-heat, and an alternate push-button control includes this cycle ahead of the dump operation.

Continuous Flow of Mixture

Preparation of the sand-resin mixture is accomplished with equipment similar to that used with the multiple station machines. It is fed automatically into the dump box all the time the box is in its rest position at 45 degrees beyond the vertical. Movement of the dump box automatically opens or closes a valve in the supply line, and a gate in the dump box is either opened or closed at the same time. This allows almost continuous flow of replenishing material in a small stream, instead of in the usual, dusty, dumping procedure.

Another thing which has been carefully controlled is the cascading of sand mixture onto the pattern as the dump box moves over and down. A gravity-actuated, hinged, sand bridge guides the flow of sand mixture so that it is as deep at the outer edge of the pattern as it is at the inner edge. The sand bridge is so arranged that its motion can be arrested in various adjustable positions.

The reason the dump box is stopped 45 degrees beyond the vertical came out of experience—that is far enough to allow excess sand mixture to drop off but not so close to the upside down position as to cause a tendency for parts of the uncured mold to fall into the sand box. The movements of the dump box and pattern plate, all automatic, are as follows:

The first movement carries the pattern plate back to engage the dump box with its normal load of 400 to 500 pounds of sand and resin mixture. Plate and dump box are latched tightly together and swing forward to a position below the horizontal, where the

Manual to Mechanized

Saves \$50,000 a Year

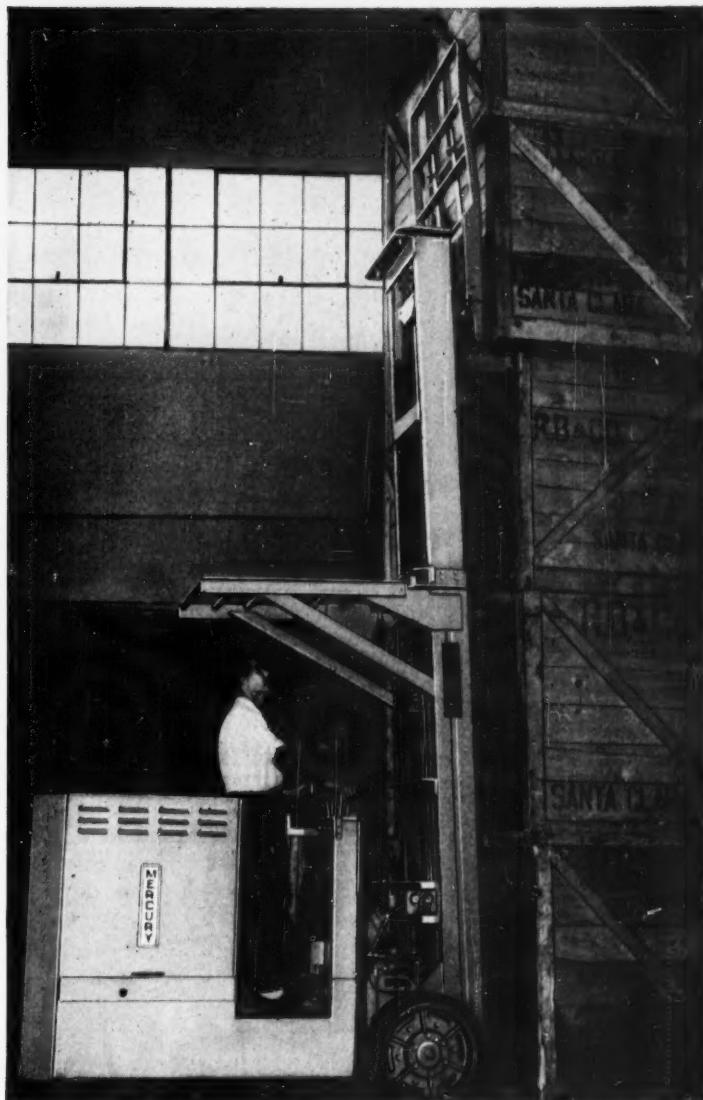
By mechanizing its material handling system, Rosenberg Bros. and Co., Santa Clara, Cal., has speeded and simplified dried fruit handling, achieved fuller use of its in-plant air-rights, and improved plant housekeeping.

The new handling system is built around portable open top storage bins and Mercury electric fork trucks equipped with special roto-lift attachments.

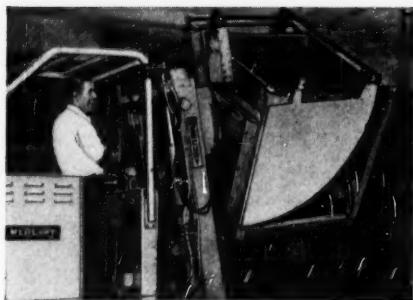
This completely mechanized handling system results in a minimum annual savings of over \$50,000.

The 180° right or left rotation of the roto-lift carriage attached to the Mercury "Yak," allows the truck operator to lift a loaded bin over the hoppers, center it exactly over a hopper partition, and dump it into the processing channel.

Find out how MERCURY can effect important savings for your company. Write or wire today!



Mercury Fork Trucks with special Roto-Lift attachments speed and simplify handling



Mercury "YAK" fork truck with roto-lift attachment empties load into hoppers. These special attachments permit the use of 4' x 4' x 4' open-top wooden bins, eliminating use of bulky fabric bags and manual handling operations.

Here the operator picks up a bin before transporting it to processing area. Formerly, products were shoveled into wheelbarrels, wheeled to processing area and dumped into hopper. In addition to eliminating manual handling operation, plant housekeeping is considerably improved.



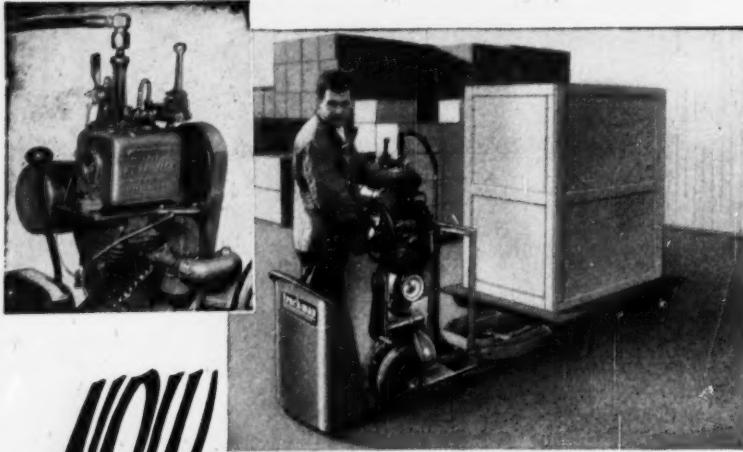
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MERCURY
FORK TRUCKS - TRACTORS - TRAILERS

World's largest builder of industrial haulage equipment and originator of the "Trackless Train"

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FLOW • SEPTEMBER, 1954



NOW truck-man

WITH POWER LIFT FOR GREATER SAVINGS

Successfully tested in the heaviest industries, two Truck-Man models are now ready to cut your costs still more with power lift. Hundreds of Truck-Man trucks with much smaller load capacities and only hand pumps are more than earning their way throughout the nation. Now Power Lift increases this efficiency while retaining the advantages of the agile standard models. A flick of the wrist and the new power lift raises or lowers the load instantly. Once load is raised from the floor, truck can start as balance of lift can be made in transit. 15-40 seconds are saved each trip — more trips per day — more work with less effort.

SIX VERSATILE MODELS

NEW MODEL DHP — Heavy Duty Skid Lift with power pump, 4500 lb. capacity — scoots through narrow aisles, up inclines and around sharp corners with a full load, three shifts a day with ease.

NEW MODEL DFP — 3000 lb. capacity, power lift Pallet Toter — hustles those heavy palletized loads around the plant in jiffy time. Easily does the work of units costing 3 to 5 times as much.

MODEL DH — 4500 lb. Skid Lift with Hand Pump. **MODEL DF** — 3000 lb. Pallet Toter with Hand Pump. **MODEL DT** — 2000 lb. Platform Utility for intra-plant messenger service, parcel delivery or other manually handled loads. **MODEL DR** — Truc-Tor for towing those heavy cargo trains — up to 6500 lbs. on dry level concrete.

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Div. of the Knickerbocker Co.					
582 Liberty Street • Jackson, Michigan					
Please send catalog and further information on:					
<input type="checkbox"/> Model DHP	<input type="checkbox"/> Model DFP	<input type="checkbox"/> Model DH	<input type="checkbox"/> Model DF	<input type="checkbox"/> Model DT	<input type="checkbox"/> Model DR
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TITLE _____					
ADDRESS _____					
CITY _____ ZONE _____ STATE _____					

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110



TRUCK-MAN OWNERS

Convert your present Truck-Man Trucks with the Packaged Power Lift Conversion Unit.

New larger diameter lift cylinder and all other parts required by quickly installed.

WHITE COLLAR FOUNDRY

Continued

layer of sand and resin is deposited on the plate. After holding in this position for a timed interval, they swing back, excess sand drops off the plate into the hopper, the pattern and box are unlatched, and the pattern plate, with its raw mold, swings down to horizontal for curing and ejecting. When the uncured mold is in position at the end of the previous cycle, the oven moves to the left to envelop the pattern.

The oven is gas-fired, with two parts—one above the pattern and one below—so that the shell mold is quickly and properly cured. Baffles are so arranged that hot gases circulate around the plate, eliminating the need for electric heating elements in the pattern.

Heat loss during the curing cycle is controlled by a baffle, which acts to close the oven's open end when it moves into position surrounding the pattern. There is no permanent connection between the stripper plate and pins, and the stripper actuating mechanism. This allows the use of a solid-bottomed oven, with advantages in economy and efficiency.

The knockout plate is held in proper position, when it is swung up with the dump box, by a cam lock. When the actuating table rises in the stripping operation, the cam is unlocked and automatic holding and release dogs provide a positive connection to the stripper plate during the pull-down.

While this machine is automatic in operation, with timed sequences and several movements of different parts to accomplish its work, it is actually quite simple.

Movements of the pattern plate and sand mixture hopper are driven through a gear segment by an electric motor. The oven movement is also by an electric motor. Only two air cylinders are used—one for latching the pattern to the sand hopper, and one for raising the stripper actuating mechanism to engage the stripper plate and remove the cured mold from the pattern.

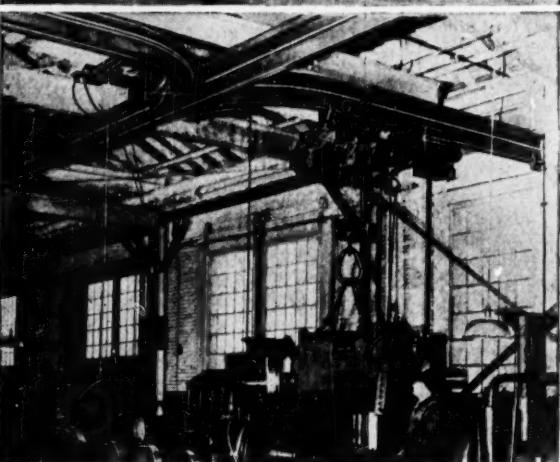
Now, with automatic shell mold making machinery available as the

what MONORAIL can do . . .



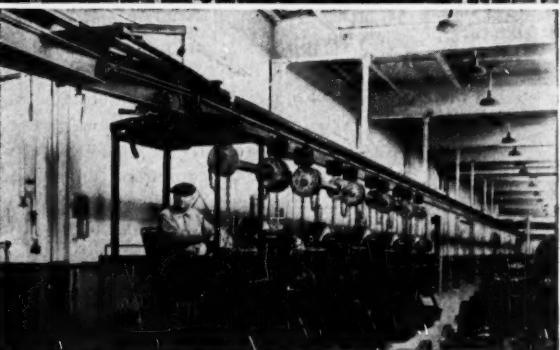
WHERE SPACE IS LIMITED

MonoRail relieves operating congestion by transferring materials handling to unused overhead area. Equipment can often be installed with no loss of production.



TO MOVE VARIABLE LOADS

Any size or shape of load, within the capacity of a MonoRail system, can be moved by using slings, grabs or other quickly changed "below the hook" devices for hand or electric operation.



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American MonoRail equipment is specially engineered and carefully built for long-life, rugged service. Manual or automatic operation continues with little or no downtime for maintenance or repair.

Send for Bulletin C-1 illustrating
hundreds of successful MonoRail
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OVERHEAD
HANDLING
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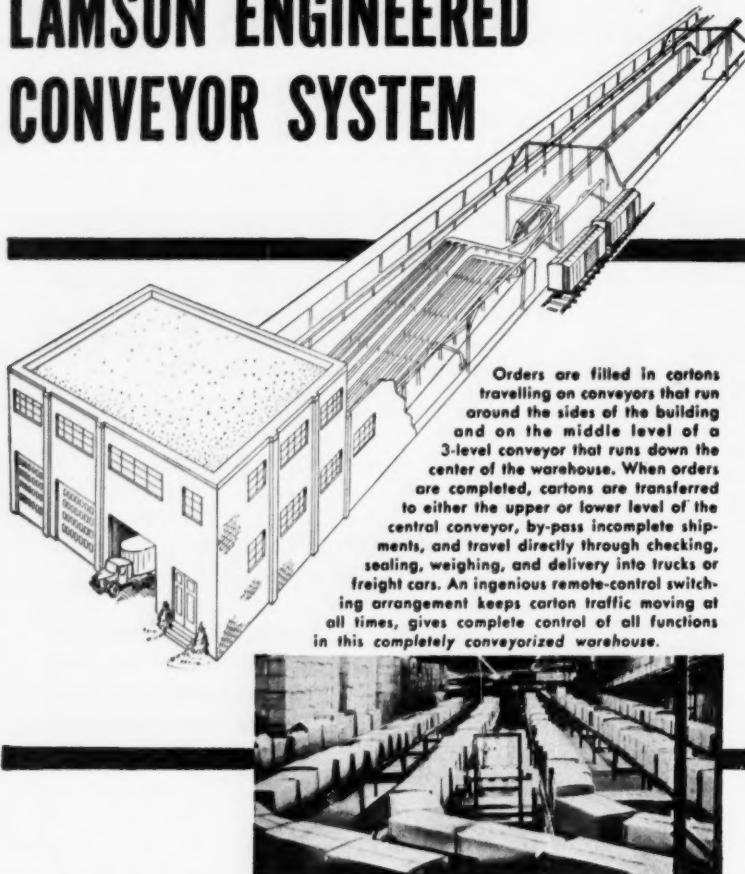
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Endicott Johnson orders get a clear track with a **LAMSON ENGINEERED CONVEYOR SYSTEM**



Endicott Johnson's new warehouse at Endicott, N. Y. is a prime example of increased efficiency achieved through an engineered conveyor layout. Now all orders for the wide variety of E. J. footwear are processed faster and more smoothly by following an uninterrupted, logical flow from receipt to shipment...all on Lamson Conveyors.

Lamson Engineers, working with Endicott Johnson's engineers, made a thorough study of all warehousing and shipping operations—based their planning on present and projected needs—then designed, built, and installed this all-inclusive system.

For help in solving your material handling problems, no matter how large or small, it will cost you nothing—and may well pay you—to talk it over with a Lamson Engineer. You'll be surprised at how economically you can get full efficiency when you "Let Lamson Move It." Write today for your copy of the *Lamson Roller Gravity Conveyor catalog*. We have a copy for you...just clip this coupon to your signed letterhead and mail.



LAMSON CORPORATION • 2409 Lamson Street, Syracuse 1, N. Y.

Gentlemen:

Without any obligation on my part, please send me my copy of the Lamson Roller Gravity catalog.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____ (Circle No. 86)

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WHITE COLLAR FOUNDRY

Continued

starting point, the fully automatic shell molding foundry begins to take shape.

A standard overhead conveyor is synchronized with the shell mold machine so that each station on the machine delivers molds to the carriers designated to receive that particular type of mold. Station Number One delivers molds to Number One Carriers; Station Number Two molds to go on Number Two Carriers, and so on. Thus, the conveyor separates and classifies the shell molds in a logical, easy way.

The overhead conveyor takes molds to the mold assembly and core placement benches, where three men remove molds from the conveyor, put cores in position, clip or glue the cope and drag halves of the mold together, and place the assembled molds on carriers of the storage and delivery conveyor.

Automatic Controls

The storage and delivery line is a power and free conveyor. This type has a "mainline" which is powered, and spur or switch tracks on which the carriers are freed of the power source. Automatic switches are a part of the power and free system, as well as automatic controls which can be preset to take a carrier to a designated spot in the system—say a loading station or a particular storage line.

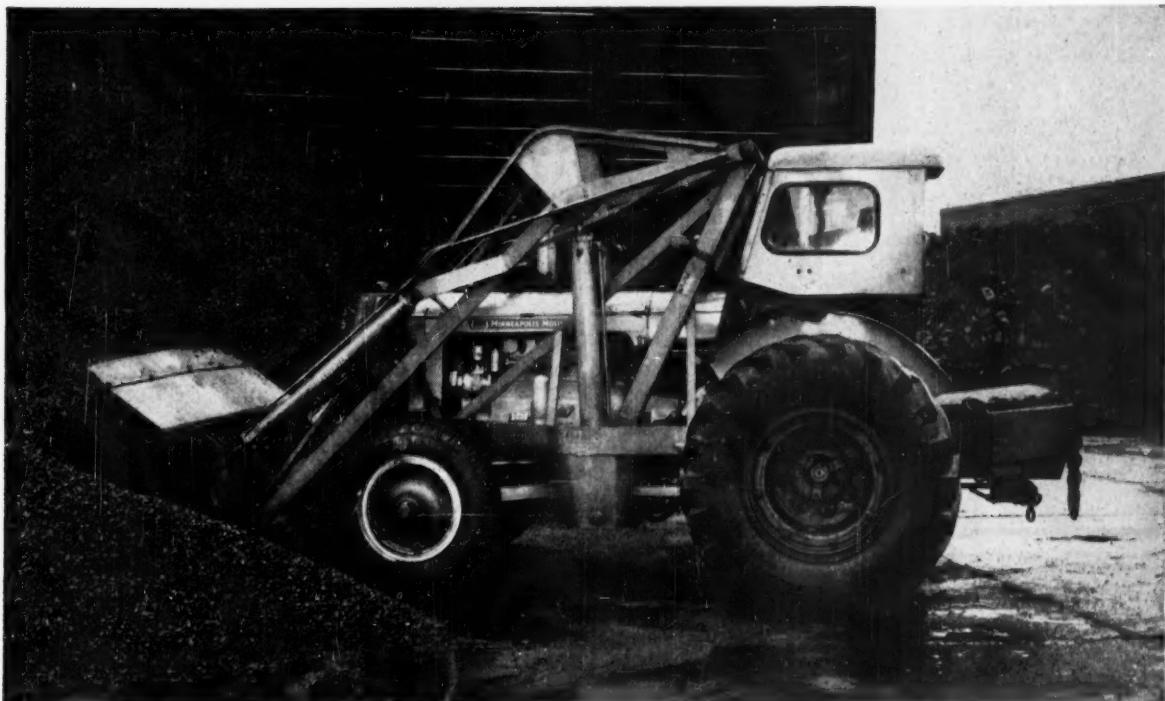
Empty carriers, automatically switched onto free stations at the mold assemblers' benches, are loaded with completed molds of a single type. Loaded carriers are dispatched, under automatic control, to the proper storage line—Number One Molds to Number One Storage Line, and so forth—where they will wait until they are required by the production schedule.

At the discharge end of each storage line there is a switch and an indexing bar, actuated by the man who assembles the molds in flasks on the casting conveyor. When he wants Number One Molds he pushes a button which actuates the indexing bar at the

COAL COMPANY REPORTS:



UTIL WHEELER UNIT DOES WORK OF \$40,000 CRANE



LOADS ITS OWN WEIGHT EVERY FOUR BUCKETFULS

"Our MM Wheeler does the work of a \$40,000.00 crane in our yard," says Clifford H. McCurdy of the McCurdy Coal and Supply Company, Detroit, Mich. With exclusive Shuttle Gear for 6 forward speeds and instant reverse in each and the extra efficiency of the MM hydraulic pump, the UTIL takes less time for each load-and-dump cycle . . . actually delivers 3 loads for 2.

MM power crowding action digs in and up . . . delivers up to $2\frac{1}{2}$ -ton bucketful at every pass. Heaviest industrial-type engines, clutches and transmissions are standard equipment on UTIL Wheelers. Heavy-duty power steering is also available for more rapid control in loose or rough ground.

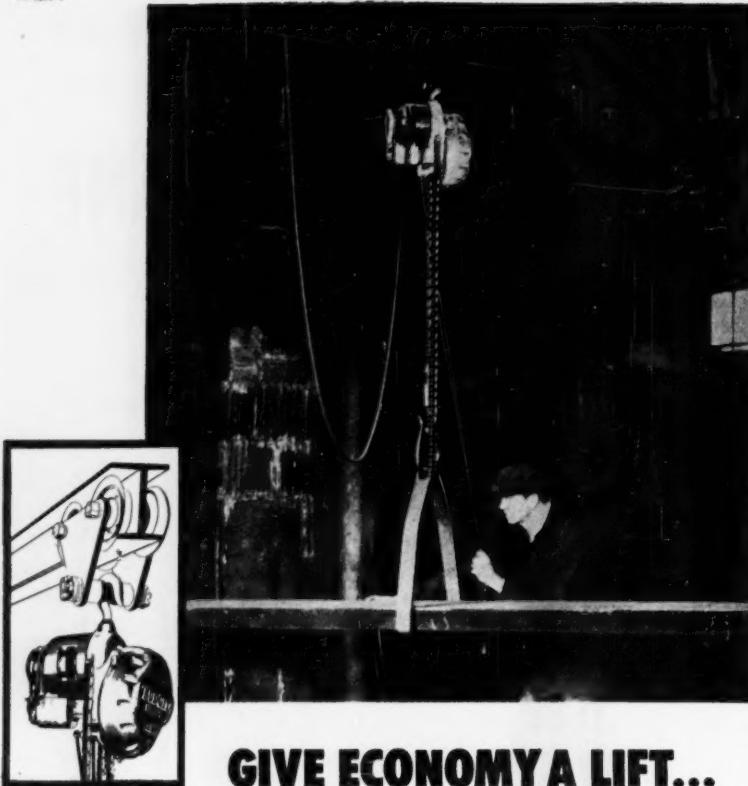
For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with greater-capacity, lower-cost, time-saving MM Wheeler units.



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



UTIL Wheeler-Loader unit has extremely long forward reach, dumping height, and greater rate of bucket lift. Shuttle gearing spots load in half the time. Cabs are available for driver comfort, permit continuous operation in any weather.



GIVE ECONOMY A LIFT...

WITH THE *Budgit*[®] ELECTRIC HOIST

There's one sure way to cut your load-handling costs. Use the economical 'Budgit' Electric Hoist. A few cents worth of electricity keeps the 'Budgit' going all day.

The 'Budgit' Electric Hoist is fast. A slight pull on the control cord of the $\frac{1}{4}$ -ton 'Budgit' lifts the full load a foot in less than two seconds with spur-gear efficiency.

The 'Budgit' is ruggedly built for trouble-free, safe service. All moving parts, including shafts, are heat-treated. Ball and roller bearings reduce friction and power consumption to a minimum. Separate motor and load brakes are provided — each will hold the full load automatically. The hooks won't fracture if the hoist is overloaded. Every provision is made to safeguard man, load and hoist.

No installation or accessory expense when you buy a portable 'Budgit' Electric Hoist! It comes complete — ready to hang up, plug in, and use! Capacities: 250 to 4,000 lbs. AC and DC models. Priced from \$139. Get complete details from your "Shaw-Box" Distributor or write for Bulletin 391.

A 'BUDGIT' I-BEAM TROLLEY enables any hoist to travel as well as lift the load. Tough steel construction. Ball bearings in wheels. Adjustable to fit several I-beam sizes. Capacities: 500 to 4,000 lbs. Priced from \$15.50. Bulletin 390 mailed on request.



Budgit[®] ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" and "Load Lifter" Cranes, "Budgit" and "Load Lifter" Hoists and other lifting specialties. Makers of "Ashcroft" Gauges, "Hancock" Valves, "Consolidated" Safety and Relief Valves, "American" Industrial Instruments, and Aircraft Products.

Circle No. 96 on Reader Service Card for more information

114



WHITE COLLAR FOUNDRY

Continued

end of Number One Storage Line. The indexing bar moves a carrier, loaded with Number One Molds, through the automatic switch onto the power line, which carries it around and shunts it automatically onto a free section at the flask loading station.

With this system, it is a simple thing to follow a production schedule exactly, pulling molds from storage in the exact order and quantity desired. Meanwhile, the mold making machine, back there at the start of our operation, is working at its most efficient rate of production, keeping the bank of assembled molds replenished.

The operator at the flask loading station places molds in flasks as they move past him on a plate-type conveyor running parallel with the power and free line. Then, as the flasks move on, an automatic device releases shot packing around the molds. The flasks then pass an operator who inspects them, adds shot protective material and removes the plug from the pouring spout of each mold.

Only two men are required for metal supply and pouring in this foundry. A powered monorail loop brings ladles of molten metal from the cupolas to the pouring station, which is a platform conveyor moving at exactly the same rate of speed as the flask conveyor. Pouring is easy, quick and sure in this synchronized operation.

During the rest of the circuit on the flask conveyor, the castings are cooling. Then, at the shakeout point, flasks are automatically removed and their contents of castings, shot and sand are separated.

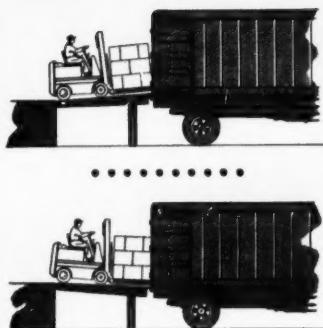
Shot goes by its own conveyor to the shot hopper near the flask loading point, where it is automatically cleaned and cooled before re-use.

Sand drops down into a belt conveyor and it, too, is cleaned and reconditioned and returned to the sand bin.

Castings are discharged onto a cooling conveyor which delivers

FLOW • SEPTEMBER, 1954

Circle No. 138 on Reader Service Card →



Moving Up or Down, the Leva-Dock Ramp keeps on the level with the truck or trailer bed. It compensates 4 ways for varying truck bed heights, out-of-level trucks, and truck spring deflection. Loading and unloading operations are made faster, safer.

New HYDRAULIC RAMP makes big savings at your loading docks

FASTER HANDLING • LESS BREAKAGE • GREATER SAFETY

The LEVA-DOCK is a hinged, self-leveling ramp positioned by an hydraulic jack. It fits into your loading dock, as shown above, so that power trucks can move in and out of trucks and trailers without using steel plates, bridge ramps or slow and expensive methods.

The LEVA-DOCK platform will support 20,000 lb. loads in operating position. It becomes a part of the loading dock floor when not in use. A new automatic safety device pre-

vents accidents and costly, time-consuming delays.

Operation of the LEVA-DOCK RAMP is by self-contained electric power unit or compressed air—very economical. Installation is simple. Dependability is assured by Rotary's experience in building over 75,000 elevating devices.

Hundreds of LEVA-DOCK RAMPS are already in use, giving excellent service and effecting substantial savings in loading costs.

Now available at new lower prices

6 NEW MODELS - For operation by electric power unit or compressed air



LEVA-DOCK RAMP

Mail coupon
for complete data and prices

ROTARY LIFT CO.,
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Send information on new LEVA-DOCK RAMPS to:

Name _____

Address _____

WHITE COLLAR FOUNDRY

Continued

THE NEW
NESTIER®
**ROLLOVER*
HOPPER**

*Patent Pending

**DELIVERS PARTS DIRECTLY
FROM SHIPPING CONTAINER**

Now . . . small parts can be taken directly to assembly or production areas in original shipping boxes or kegs . . . made available to workers in convenient hopper form without rehandling into other containers.

In use, a full box or keg, with lid removed, is slid into the bolted down Rollover Hopper. Back panel is lowered and locked in place. Unit then is rotated on its pivot trunnions and parts are literally dumped into the hopper tray, which is designed for easy three-finger withdrawal. Engineered balance allows almost effortless rotation. Easily adjusted sliding "gate" regulates flow.

**FOR USE IN ASSEMBLY
OR STOCKROOM**

Large quantities of high velocity small parts are made readily available by the NesTier Rollover Hopper without rehandling. Original shipping container is utilized throughout, bringing new economy and efficiency to small parts handling systems.

Write today for Bulletin ROH-201.

C-162-DN

**THE CHAS. WM. DOEPKE
MFG. CO., INC.**

8836 BLUE ASH ROAD • ROSSMOYNE, OHIO

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them to sprue removal. Castings are classified here and placed on carriers waiting on the free line of a second power and free conveyor. When loaded, the carriers are switched to the power line and dispatched automatically to finishing or storage. This power and free line also carries sprues to metal storage.

Few Men, Little Skill Needed

The automatic shell molding foundry just described requires only 15 or 16 men for the whole operation. There isn't a single job which calls for a high degree of skill, or for long training. Since machines and conveyors set the rhythm of production, this foundry requires a minimum of supervisory time; yet the standards of work accomplished will be easily met, shift after shift.

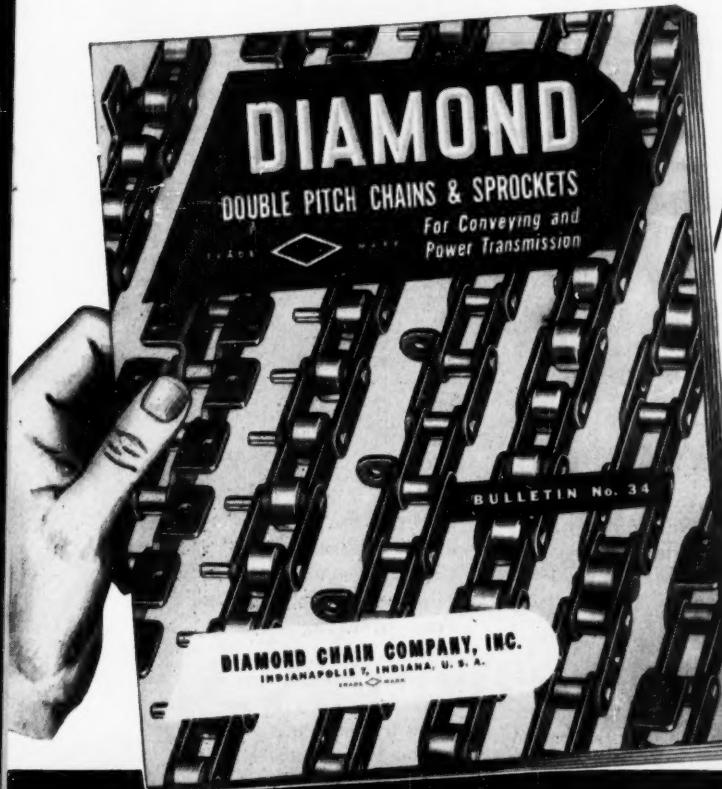
The foundry, with its 12-station shell mold machine, will produce 1920 molds, or about 50 tons of small castings, per 8-hour shift, with a labor force only a quarter to a third as large as would be needed to produce the same tonnage in a conventional mechanized foundry.

And, of course, tonnage is only part of the story. The castings produced embody advantages of superior finish, close dimensional tolerances, and improved physical characteristics. More castings are obtained per ton of metal; fewer castings are rejected, or spoiled in machining.

Another credit for shell molding is the cleanliness of the process and the equipment engineered around it. The materials used in making the molds are inherently clean, and dust control takes care of the mold assembly, pouring, cooling and shake-out operations. Now, for the first time, a foundry can be as clean as any other plant!

This article has been presented through the courtesy of the American Society of Tool Engineers. It consists in part of abstracts from, and in part of expansion on, a talk given by Mr. Bishop at the Twenty Second Annual Meeting of the A.S.T.E., at Philadelphia.

NEW BULLETIN 34 Simplifies Selection of Conveyor Chains and Moderate Speed Power Drive Chains



Precision-made conveying media are important in modern conveyor systems, sorting, timing and feeding mechanisms and for the handling of materials, containers, parts in process. For such functions, Diamond Double-Pitch Conveyor Chains are made in a great variety of types and sizes. Attachments can be located at intervals desired and may be of the bent or straight type, extended pin, pusher or cradle type. For moderate speed transmission of power the Diamond Double-Pitch Power Transmission Chains provide light weight with complete dependability, and long life, attractively priced.

The 32 pages of New Bulletin 34 carry illustrations and complete tables for easy selection. Just off the press, a copy is yours for the asking. Tear out the coupon reminder now.

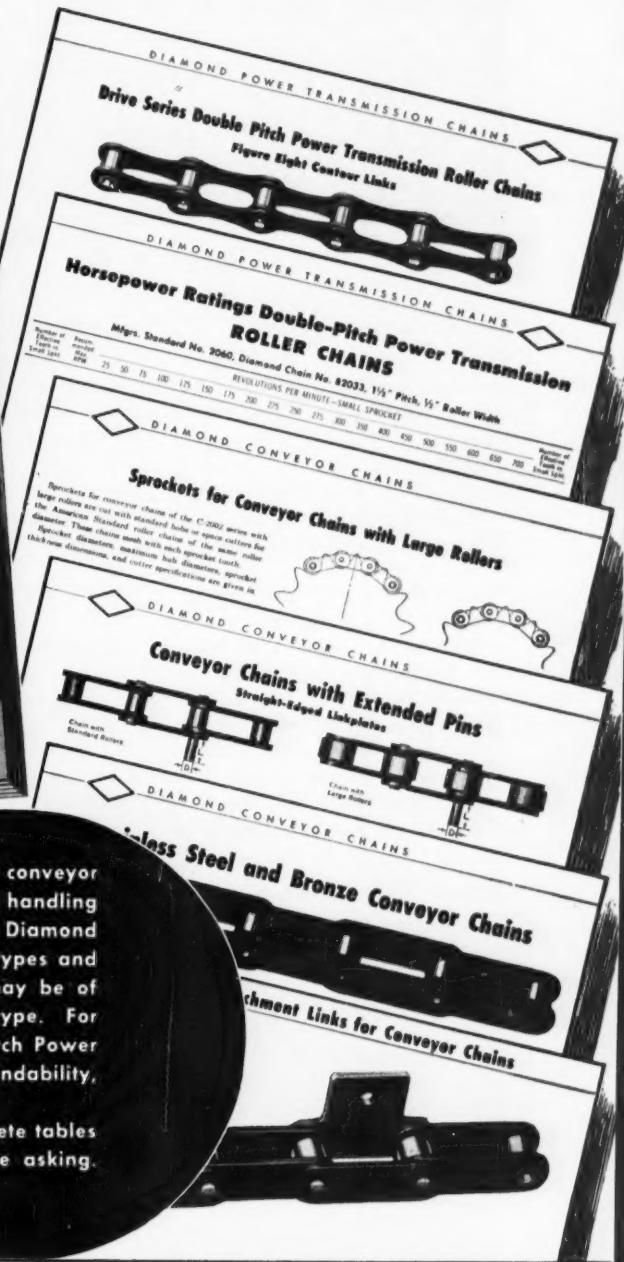
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Handling Problems Solved:

How five companies in five different industries attacked their handling problems—some with dramatic results—is explained and illustrated in the current 20-page issue of *Material Handling News*, published by the Clark Equipment Company, Industrial Truck Division. Detailing problems encountered by the companies and procedures used to make their material handling methods more efficient, the magazine treats firms in the stevedoring, toiletries manufacturing, wood products manufacturing, building supply and construction industries.

Circle 205 on Reader Service Card

Better Belt Joints:

Literature from Clipper Belt Lacer Company describes the company's entire line of belt lacing equipment, which is said to make better conveyor belt joints. Belt lacers and belt hooks are available to meet all requirements.

Circle 206 on Reader Service Card

Vibrating Conveyor:

A bulletin offered by the Gifford-Wood Company illustrates and describes the company's "Oscilveyor" vibrating conveyor. The bulletin explains how the conveyor operates, and gives features which are said to make it particularly desirable for handling fine granular materials. Included are dimensioned engineering drawings and tabular information correlating pan size with the speed at which the material travels.

Circle 207 on Reader Service Card

Packaged Speed Variators:

A complete line of packaged speed variator drives from 1 to 200 horsepower is described in a bulletin announced by the General Electric Company. Designated as GEA-6127, the 20-page publication explains, with illustrations, the operation and application of the basic speed variator and additional features which are available.

Circle 208 on Reader Service Card

Rubber-Tired Tractor:

Described as a highly-manueverable, medium-size rubber-tired tractor capable of keeping pace with the larger size units, the new 150 hp Cat DW15 tractor is detailed in a broadside published by Caterpillar Tractor Company. Included are photos and cutaways of the engine, transmission and clutch, plus a detailed specification sheet.

Circle 209 on Reader Service Card

Woven Wire Products:

The Cambridge Wire Cloth Company tells about four of its products in a 4-page bulletin. Application photos describe a few of the uses of its woven wire conveyor belts, industrial wire cloth, special metal fabrications and woven wire slings.

Circle 210 on Reader Service Card

Easy-Steer Truck:

A low-lift platform truck equipped with four-wheel steering to provide maximum ease in negotiating right-angle turns is de-

scribed in a 4-page folder issued by The Elwell-Parker Electric Company. Full illustrations, diagrams and construction details of the 4000-pound-capacity truck are included.

Circle 211 on Reader Service Card

Crane-Shovel Movie:

A pamphlet from Bucyrus-Erie Company announces the availability of 16 mm. sound-color motion picture, "These Users' Views". More than 30 material handling, loading and excavating jobs are shown in the film—all done by the Bucyrus-Erie line of $\frac{3}{8}$ to 4 yard power shovels and cranes.

Circle 212 on Reader Service Card

Stop Dock Damage:

You can prevent damage to trucks, loading docks and buildings by installing rubber dock bumpers, says literature from Bumpers, Inc. Said to be easily installed on wood, steel or concrete, the bumpers need no maintenance, repairs or upkeep of any kind.

Circle 213 on Reader Service Card

Advantages of L-P Gas:

"LP-Gas, the Modern Fuel" is a folder published by American Liquid Gas Corporation, and it pinpoints the outstanding advantages of LP-Gas. The purpose of the folder is to bring to the attention of all interested parties a simple explanation of the reasons why LP-Gas is an ideal engine fuel.

Circle 214 on Reader Service Card



CONNECT TO BATTERY as Frank J. Thornton, foreman of the Albany Freight Transfer, Delaware & Hudson Ry. is doing, then . . .



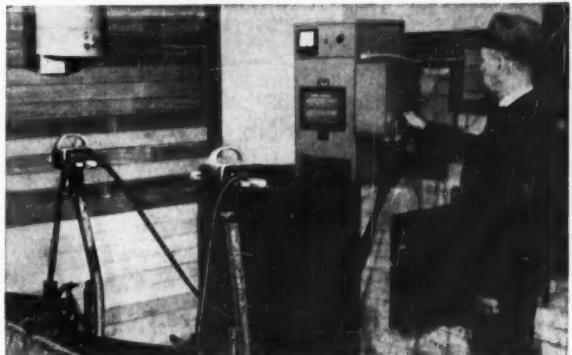
TURN ON TIMER . . . and the charger takes over automatically. When charge has been completed, units turn off automatically.

Why Delaware & Hudson Railroad Uses G-E Chargers for Driver-Lead Trucks

Five nights a week for the past three years, two G-E Rectifier Battery Chargers with sequence charge control have charged four driver-lead trucks at the Delaware & Hudson Railroad Corp's. Albany Freight Transfer. "Excellent service" reports A. B. Cook, Freight Agent in Albany. "We need top efficiency for closely-timed freight handling, and we get it with G-E Rectifier Battery Chargers."

Easy to install, easily moved to more efficient locations, and simple to operate as well, G-E Rectifier Battery Chargers have no moving parts to wear out, require virtually no maintenance, and can be adjusted to charge different types and sizes of batteries. The high quality rectifier stacks assure long, economical life.

For more information, see your truck manufacturer's agent or G-E Sales Office. For literature write to Section 463-9, General Electric Company, Schenectady 5, N. Y.



DOUBLE CHARGING CAPACITY with G-E Sequence Control, for less than the cost of an additional charger. With one charger you can charge 2 batteries in 13 hours or less.

Progress Is Our Most Important Product

GENERAL  **ELECTRIC**

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Economic Bulk Handling:

Published by the Baker-Lull Corporation is a condensed picture catalog on its new Model 20 Shoveload, a rubber-tired tractor loaded with a standard bucket capacity of 12 cubic feet. Designed for the economical handling of bulk materials, the Model 20 has an "all-in-one" packaged power train that helps reduce original purchase price and simplify maintenance.

Circle 215 on Reader Service Card

Rubber-Tired Cranes:

A 12-page, two-color catalog which illustrates and describes the Lorain "42 Series" has just been released by the Thew Shovel Company. These machines are built exclusively for mounting on rubber-tire carriers and, as such, their turntables incorporate specific design features. These features are highlighted in the booklet, together with numerous on-the-job action pictures.

Circle 216 on Reader Service Card

Custom Work Platforms:

All-steel portable and stationary platforms custom-fitted to each work requirement are illustrated and described in a folder from Ballymore Company. Increased production, safety and convenience in working at high levels are pointed out as prime considerations in Ballymore work platform design. Platforms for large equipment repair, production operations, maintenance and other uses are described.

Circle 217 on Reader Service Card



*"He Certainly Goes To Sleep Faster Since He
Telephoned Alvey-Ferguson in Cincinnati (REdwood 7000)
For A New A-F Engineered Conveying System."*

----- For Engineered Conveying Systems -----

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YOU CAN SEE the superiority of
A-F Conveyor Engineering ... for
a discussion of latest efficient
methods of handling cases and
barrels — filled and empties —
write today.

THE ALVEY-FERGUSON CO.

437 Disney Street,
Cincinnati 9, Ohio



The Original
Since 1901

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120

Busway Electrification:

Feedrail Corporation has issued a 40-page bulletin (No. 45) which catalogs its "60" ampere steel enclosed trolley busway electrification system. Included are the new 20-ampere trolleys, an enlarged line of standardized curved track sections and other new items. Also, there are special sections on installation planning and procedure, methods of mounting, and typical applications in addition to the sections devoted to the equipment itself.

Circle 218 on Reader Service Card

Speeds Belt Fastening:

Bulletin F-110 from Flexible Steel Lacing Company describes tests which show that fastening of wide conveyor belts can be speeded up as much as 50 percent with the company's new Flexo speed tools. Furthermore, these tools are said to take much of the hard work out of joining a belt.

Circle 219 on Reader Service Card

Efficient Parts Handling:

Wire & Iron Products Inc. offers a new bulletin on its line of Eezy-Stak parts-handling baskets, which are said to promote greater efficiency in parts handling and storage, helping to keep rejects at a minimum. The bulletin, No. B-54, describes the firm's complete line of standard and custom-engineered baskets.

Circle 220 on Reader Service Card

(Continued on page 156)

STOCKPILING SYSTEMS . . .

(Continued from page 72)

widely, and may or may not be a deciding factor in the choice of the type of equipment to be used. It does, however, determine the physical size of the stockpile and the handling system.

The turnover rate, which is the rate at which material is to be stocked and reclaimed, has a great bearing on the kind of equipment used. In the case of a stockpile entirely for in-process surge capacity, the rate into the stockpile is approximately the same as the rate of reclaiming. This is especially true at the blast furnace ore yards in the southern part of the United States, and the equipment can be applied on the basis of a lower handling capacity.

Seasonal Factors

In a stocking and reclaiming process where it is necessary to accomplish the stocking in six or seven months of a whole year's supply, the equipment must have larger capacity. Such a situation occurs at ore yards which rely on Great Lakes ore, where economic necessity dictates using low-cost water transportation which is not available throughout the year.

The reverse is true in the case of emergency coal stockpiles which have become necessary in recent years because of frequent and prolonged interruptions in mining operations. These are purely an insurance against interruption of coal deliveries, and are often installed with the hope they will not have to be used.

The handling system in connection with such stockpiles must be of minimum capital cost. Generally, the piles are made large enough for 60 to 90 days' operation; thus, while continued operation of coal-consuming units might dictate a very high reclaiming rate, the rate of stocking could be greatly reduced.

A proper estimate of the expected life, or of total tons to be handled during the life of a system, is essential to a sound analysis. This estimate will determine whether a large investment is indicated to effect a low operating



This flick of the wrist saves dollars per year!

Even in the elementary job of watering industrial truck batteries, EDISON batteries have been designed to save you money. As part of its steel construction, each cell is equipped with a hinged filler cap which opens easily and cannot be mislaid. Minutes per day are saved by this EDISON feature alone.

This is only one reason for EDISON battery's lowest over-all cost. Because of their resistance to electrical abuse and their steel cell construction, EDISON batteries give more than twice the performance

life of other type batteries in industrial-truck operation. They are not harmed by the overcharging, or short-circuiting incidental to this service. Ease of daily handling and charging of EDISON batteries also keep industrial truck costs down to minimum.

Examine the EDISON cell's profitable advantages at your own desk. Send for bulletins 2039 and 3808; ask for the EDISON field engineer's call. Write Edison Storage Battery Division, Thomas A. Edison, Inc., West Orange, New Jersey.

**Most dependable power...
lowest over-all cost
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STORAGE BATTERIES

EDISON ALSO MAKES THE FAMOUS "V.P." VOICEWRITER AND THE TELEVOICE SYSTEM
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STOCKPILING SYSTEMS

Continued

cost (as in the case of a permanent installation), or whether a comparatively low capital investment for equipment having a higher operating cost will produce the overall low total cost per ton of material handled.

The size and shape of the available space will have a significant bearing on the type of system se-

lected. Mobile equipment, for example, is more adaptable to irregular stocking areas, whereas rectangular spaces are more suitable for conveyor systems or bridges.

In cases where all conditions might indicate either a conveyor system or a bridge for stocking and reclaiming, climate alone may be a deciding factor. Tunnel conveyor reclaiming systems are handicapped in northern climates because they depend upon a free flow of the stocked material through openings in the roof of

the tunnel. If freezing prevents this free flow, the system bogs down.

The same condition is encountered with wet, sticky ore which, in many cases, is not suitable for reclaiming by gravity onto conveyor belts.

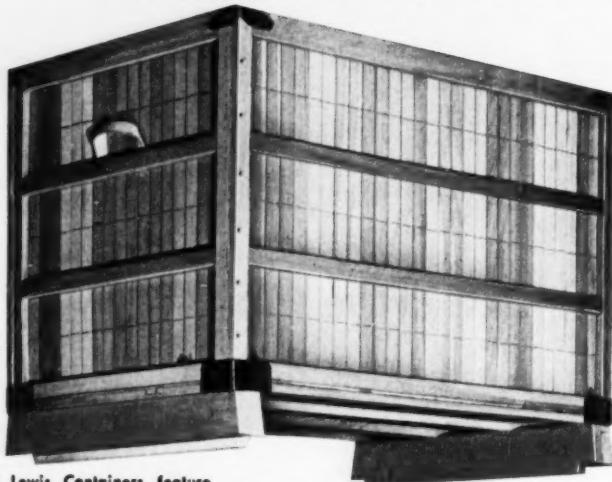
Summary

In summarizing, the principal factors to be considered when selecting a bulk material stockpiling system are: (1) the nature of the material to be handled; (2) the quantity to be stored and turnover rate; (3) the estimated life of the system; (4) the available storage space; (5) the climate.

And, in the final analysis, the best method will be that which will result in the lowest handling cost per ton of material over the actual life of the system. This must include all costs, both capital and operating.

Editor's note: Mr. Gibbs originally prepared the foregoing material as a paper for presentation at the Semi-Annual Meeting of The American Society of Mechanical Engineers.

THIS IS A LEWIS *Skid Box . . .*



All Lewis Containers feature select elm slats bound in sturdy steel wire. Hardwood frames are locked by dove-tailed joints and reinforced with heavy corner irons.

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Put this skid box to work from your receiving room to your shipping room. Handle it singly or in multiples . . . stack it ceiling high . . . load it heavy or load it light. Grab a stack with auxiliary equipment for swift movement. Built to take it! Use a Lewis Skid Box for years of service. Write for folder.

WAREHOUSING . . .

(Continued from page 84)

Bonus System For All

By the use of a statistical clerk, a complete production record of each man and job is maintained. On the basis of work study, a bonus system for all warehouse employees was established; each job is rated for bonus on its own production. With a more cordial relationship with the Union, it has been possible with the consent of the men, to raise the basis of the bonus, on two occasions, as a result of increased production. The additional clerical and bonus expense has been more than justified by ever increasing production.

The fleet of 28 delivery units has also been placed on a bonus system. With the cooperation of customers, new delivery schedules were worked out, using the largest delivery unit permissible under the Oklahoma Law. The old units

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were replaced with new. Driver expense was cut by over 25 percent.

In the case of our drivers, we take the actual driving time and mileage from their trip tickets. Their average driving time is compared to 35 miles per hour. Pounds per hour unloaded—also obtained from their trip tickets—is compared to 10,000 pounds per hour. The percentage of efficiency is thus established.

For city runs, we allow 15 miles per hour in addition to the actual miles per hour of the drivers. Percentages of efficiency are posted monthly. In April, for example, we posted the following efficiency percentages for our drivers: 72, 81, 90, 85, 82, 74, 89, and 83.

The two drivers having the highest efficiency percentages received \$10 and \$5.00, respectively.

Drivers are also paid a \$15 bonus each six months for not having a chargeable accident.

In the house itself, the bonus for list pullers is, of course, based upon the actual number of cases pulled each week—with \$7.00 and \$5.00 for the top men. In addition to this, we pay a \$10 bonus each time a multiple of 500 is passed.

The record now stands at 2967 cases in a 10-hour working day.

Lift truck operators are paid a flat \$3.00 for maintaining less than five short items on the assembly line per shipment.

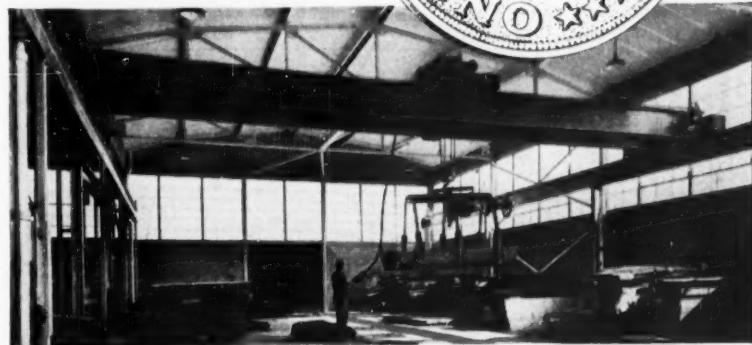
Our foremen are paid \$10 monthly bonuses if they are able to keep the total house damage below \$100 for the month.

Education

An educational program, as each step was developed, was explained to the men in "Bull Sessions". As a result, the morale is high and expenses are down. There are additional, indirect results, such as damages reduced by nearly 75 percent.

Drivers have been taught to sell The Scrivner-Stevens Company. Each driver is a salesman—not of groceries but of The Scrivner-Stevens Company. There are, of course, many problems unsolved, but with planning and cooperation we feel that we have a team that can solve them. The attitude of all employees from the executives to the bull gang is: "We're just getting started!"

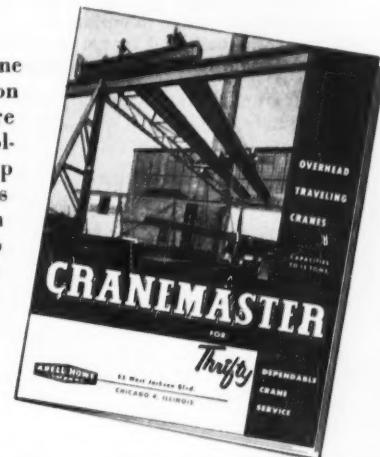
Get the Most for Your **CRANE DOLLAR**



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Chicago 4, Illinois

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ORDER PICKING . . .

(Continued from page 91)

capacity of the line.

The live belt at the final leg of the line is reversible and can be used for temporary storage of completed baskets whenever the packers on the floor below have a peak load. This storage feature is important since it enables order fillers to clear completed baskets from the line and make room to process oncoming baskets.

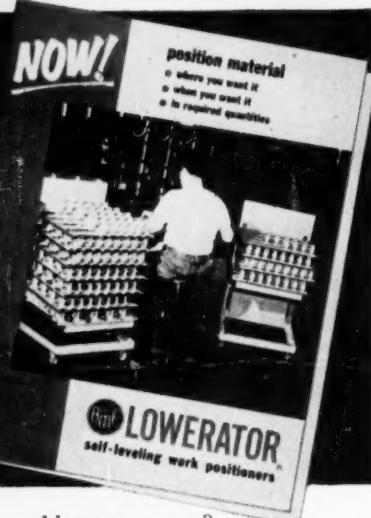
In addition to the regular processing lines, the warehouse has a special belt conveyor connecting the stock picking floor with a waiting room on the second floor. This permits immediate service to customers, who come to pick up emergency orders, without dislocating anyone from the stock floor to bring the merchandise downstairs.

On the Second Floor: The packing (second) floor installation has a three-level conveyor

line that serves the packing tables. Each of the tiers has a separate function, each important to the operation of the system, but all are served simultaneously without any loss of floor space. The lower tier, as already mentioned, carries the packed and sealed cartons down to the first floor shipping area and delivers them to the "crow's nest" sorting ring, from where they are transferred by roller conveyor to the shipping docks.

Work Positioning Problem?

Get this new folder
—FREE. Find out
how to solve
your problem—
plus many others.



How many of these work-positioning problems are yours?

- Operators not producing at maximum rated speed of machine?
 - Workers have to replenish stock too often?
- Products damaged by careless handling in processing?
 - Labor waste due to variations in machine times?
- Labor costs too high because of excessive bending and stooping?
 - Inefficient loading, transferring and packaging operations?

This new, free folder tells how AMF Lowerator Self-Leveling Work Positioners helped solve these and many more problems . . . and how they can help you!

Best used where production operations require continuous runs of similar items, AMF Lowerator Dispensers® will give you long years of trouble-free service. And you pay no charges for power! They are available in standard as well as custom-built models, and offer a wide range of size and weight capacities.

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Conveyor Line

The middle tier, at the same height as work benches on the packing line, carries loaded baskets from the dispatcher to the packers. The upper tier is the beginning of a long conveyor line that carries empty baskets away from the packing area, moves them up an "escalator" through the ceiling, and eventually returns them to the starting point of the picking line on the third floor. This return line travels a large U-shaped path on the third floor and provides extensive overhead storage space for empty baskets during slack periods.

Another function of the return line overhead is that it gives order fillers a convenient supply of empty baskets whenever they need another one to complete an order. Since it closely follows the course of the production line, workers can merely reach up for additional baskets without leaving their sections.

Automatic Starting for Filling Line

The return line delivers empty baskets to the starter at the head of the production line. To start an order, he merely pulls a lever which releases one basket at a time from the return line on to the beginning of the production line. He therefore never has to lift a basket to start an order. This is a labor-saving arrangement when one realizes that each basket weighs 10 pounds empty and that, during a busy day when 950 orders are started, the starter would have to lift the equivalent of nearly 5 tons.

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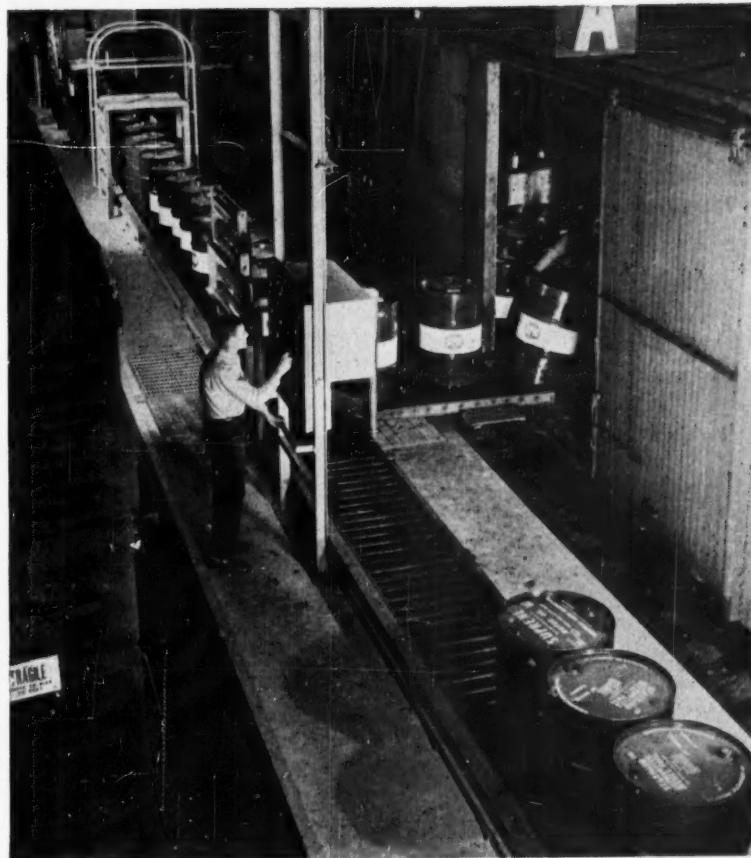
floor is devoted to packing, the other is used to store case lot merchandise, especially bulkier items such as paper products. This area is served by a separate conveyor system.

An inclined molded-surface belt conveyor connects the receiving platform with this second-floor storage area. Incoming cartons can, therefore, be sent directly to the floor with a minimum of handling. The cartons ride off the inclined conveyor onto a powered belt unit that runs the length of a center aisle in the storage area. The belt is installed at nearly ceiling height to provide access to storage areas on both sides of the aisle. Removal of incoming cartons from this belt is by a movable deflector which can be positioned anywhere along the belt. It shunts cartons onto a section of portable roller conveyor which brings them to floor level for stacking.

The inclined conveyor from the receiving platform can serve either of two conveyor lines—the storage area conveyor (just described) or another conveyor (located at right angles to the first) which delivers empty cartons for use in the packing area. By raising or lowering a short section of connecting conveyor workers can feed either of the two lines.

Time-Delay Interlocks

Into all powered sections of the conveyor system on the third and second floors there has been designed time-delay interlocks that control the power to the motor drives throughout the system. Each of these interlocks has a feeler that extends out into the conveyor line where it is pushed aside by passing baskets. If any one of these interlocks is held in the shut position for longer than seven seconds, as would be the case when the line becomes filled with baskets, the interlock affected will shut off power drives in the belt sections behind it to prevent additional baskets from being delivered to the area and worsening the jam. Wherever there is no visual contact between floors, the interlocks are valuable traffic controls. For example, interlocks



LIVE ROLLER CONVEYERS

one of the many types of high-quality power and gravity conveyors in the MATHEWS line



Live Roller Conveyors may be belt or chain driven, although belt-driven conveyors are generally used for package handling. Having certain advantages over other power conveyors, it is possible to deflect smoothly from Live Roller Conveyors and, where necessary, to stop the load on the conveyor without stopping the conveyor itself.

Live Roller Conveyors are frequently used for conveying materials that could not be practically handled on belt conveyors. They may be hung from the ceiling, set at working level, or operate between buildings.

If you need complete information about Live Roller Conveyors, call your nearby Mathews representative. You'll be glad you did.

Write for Catalog HB-53 for details of Live Roller Conveyors . . . and for Catalog No. 853, which illustrates many installations that will help you with your conveying problems.



MATHEWS CONVEYERS

GENERAL OFFICES Mathews Conveyor Company
ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIVISION . . . Mathews Conveyor Company West Coast
SAN CARLOS, CALIFORNIA

CANADIAN DIVISION Mathews Conveyor Company, Ltd.
PORT HOPE, ONTARIO

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picks up

hauls

dumps

puts down

ALL PURPOSE

SCRAP

SKIP

POWDERS

WASTE

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LIQUIDS

CONCRETE

HOPPER

PALLET

LOAD LUGGER

The LOAD LUGGER is a flat truck bed with powerful hydraulic hoisting arms. Mounted on any standard truck chassis it lifts up to 18,000 pounds and is operated by the driver from his cab.

The LOAD LUGGER-truck is used as an ordinary flat-bed truck when desirable, picking up and putting down bulky or heavy materials with its hoisting arms and carrying all materials on its bed.

The LOAD LUGGER-truck is most effective, however, when used with a variety of patented LOAD LUGGER containers, holding up to 15 cubic yards, or pallets. It hoists them in a level position, carries them cradled on its bed with load well forward, dumps them, and puts them down.

The LOAD LUGGER SYSTEM is for one truck and driver to do the work of many by continually picking up, hauling, dumping, and returning a number of LOAD LUGGER containers or pallets.

The LOAD LUGGER-truck carries more pay load than does any comparable equipment. Its patent-protected simplicity of design and construction, with no cumbersome superstructure or fancy gadgets, results in a lower first cost and lower maintenance costs. Any truck driver can operate the LOAD LUGGER — efficiently and safely.

patented and manufactured by the

BROOKS
EQUIPMENT & MFG. CO.
2025 DAVENPORT ROAD, KNOXVILLE, TENN.
USED ALL OVER THE WORLD
Send for a catalog today.

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ORDER PICKING

Continued

on the line which feed baskets to the dispatching point on the second floor actuate to prevent delivery of additional baskets from the third floor whenever the packing line is overloaded.

Summary of Results

The rearrangement of working space and mechanization of the order filling process has produced these benefits:

- (a) Substantial cost of constructing a new building was saved. Both needs—the larger order handling capacity plus additional storage space—were obtained in the existing building.
- (b) Picking efficiency of order fillers has been increased and this, with the help of conveyors, is converted into increased productivity. On peak days the firm now processes about 950 orders, as compared to the same 725 orders previously possible.
- (c) Straight-line, fixed-route flow of baskets in process eliminates delays from misrouted or overlooked orders. Bottlenecks are easier to locate and correct before they can develop to troublesome proportions. Control and supervision of operations and personnel are simplified.
- (d) The system is flexible. It permits large numbers of orders to be processed at any one time, but it also can service rush orders without disrupting normal operations. The system provides for temporary storage of completed or partially completed orders so that unbalanced work loads in any part of the line do not interrupt production in other sections.

For details and pictures on this installation, FLOW thanks Lamson Corporation.

RADIO . . .

(Continued from page 75)

patching material from stores to assembly points is a complex problem.

Before two-way communication was applied to the stores-assembly operations, written requisitions for material were prepared by assembly supervisory personnel and delivered to the stores department office. The stores department in turn relayed this requisition to a fork truck operator for pick up and delivery to the various assembly points.

This processing cycle required from 10 to 30 minutes, and involved as many as four individuals. To streamline these operations, three base (fixed) stations were established for communication with four radio-equipped fork trucks responsible for delivering material from outlying stores areas to assembly operations. Two of these base stations are located on the assembly floor and the third unit operates from the stores department office.

In this system, there is no central dispatcher. Radio communication provides direct verbal contact between the requisitioning supervisor and the truck operator, and the processing time cycle has been reduced by approximately 80 percent.

Since the installation of two-way radio in the assembly department, tangible savings of approximately \$24,000 a year in personnel reductions have been achieved. Furthermore, intangible savings which represent an additional \$2400 a year were made possible by reducing the production hours lost in waiting for delivery of material.

And, the total savings in manufacturing and assembly operations which may be attributed directly to two-way radio amount to some \$41,000 a year. This, remarkably enough, with a capital expenditure of less than 20 percent of that amount.

FLOW thanks Radio Corporation of America, Communications Equipment for information and photos contained in the preceding article.

DEMANDED BY INDUSTRY— DESIGNED BY MARTIN-DECKER



S-10 CRANE WEIGHT INDICATOR tells total weight, boom radius, and capacity at each radius.

A new kind of hook scale



The SU-20
Sensater

For years you have asked for a hook scale like this. For years you have had to compromise. Haven't you always wanted a hook scale that was accurate, rugged, versatile, compact, and light weight — and yet, inexpensive?

The new SU-20 Sensater Hook Scale combines these features and more. How? Martin-Decker has designed a completely new kind of hydraulic load cell with a wonder-working mobile diaphragm that operates with no friction whatsoever!

Unlike any diaphragm you have ever seen, the Sensater's mobile diaphragm does not stretch or deflect but moves with its backing plate to give a piston-like stroke without being encumbered with any friction-causing piston-rod or O-rings. Since the diaphragm does not stretch, there is no chance of its rupturing. It will give you years of trouble-free operation. And its accuracy is unaffected by temperature and fluid changes.

This lack of a piston-rod also means less weight and much less headroom loss. The 5000-pound-capacity model, for instance, only requires 15-11/32". This same model only weighs 70 pounds (about half the weight of hook scales of comparable capacity). Installation and use are simple one-man operations.

The SU-20 Sensater Hook Scale has an easy-to-read dial that can be tilted up or down to any eye level. Full 360° hook rotation. Full 360° dial. High safety factor.

For prices and other information, contact your nearest Martin-Decker distributor or Martin-Decker Corporation, 3431 Cherry Avenue, Long Beach 7, California.



S-4 CRANE WEIGHT INDICATOR — small, low cost, remote reading, for use on all types of cranes.



J-30 TENSIMETER utilized instrument, used as traction dynamometer, suspension scale, etc.



J-302 TENSIMETER remote indicating dynamometer, cable strain equalizer, etc.



LIFT TRUCK SCALE makes any hydraulic cylinder-type lift truck a scale, measures full safe load.



STANDARD TENSION INDICATOR used as dynamometer or for equalizing strain on cables, wires, etc.



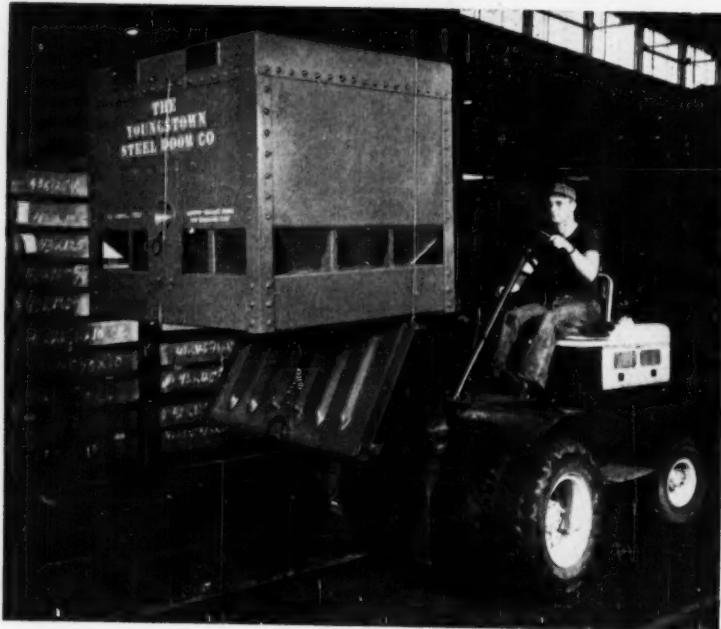
HEAVY-DUTY TENSION INDICATOR for use on $\frac{3}{8}$ to $1\frac{1}{2}$ " wires and cables; has 200,000-lb. capacity.

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Versatility

The versatility of handling illustrated by these action shots, clearly demonstrates the flexibility of design of Youngstown containers. Our engineers can as readily tailor Youngstown containers to fit your needs perfectly.



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◀ FORK LIFT TRUCK HANDLING
▼ MAGNET HANDLING



● Consult with us for improved handling of your bulk materials

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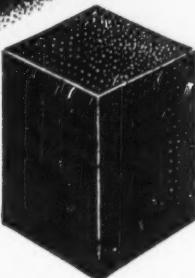
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FLOW • SEPTEMBER, 1954

PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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WORLD'S STRONGEST TAPE?

"Scotch" Brand Filament Tape. It's super-strong and shock-resistant, has up to 500 pounds tensile strength per inch of tape width. Thousands of filaments imbedded in pressure-sensitive adhesive. New exclusive "mirror-surface" adhesive gives 100% tape contact... puts all the amazing tape strength to work. For more data on this heavy-duty packaging and materials handling tape, write on your letterhead to Dept. F-94.

FILAMENT TAPE...one of
300 PRESSURE-
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LOOK what you can do with it!



PALLETIZE merchandise for storage or shipment. Filament tape holds packages securely; can't cut workmen's hands; won't cut or damage packages; presents no disposal problem.



UNITIZE shipments of bagged goods with "Scotch" Brand Filament Tape. A quick, inexpensive way to reduce damage claims due to load shifting, bulging, vibration.

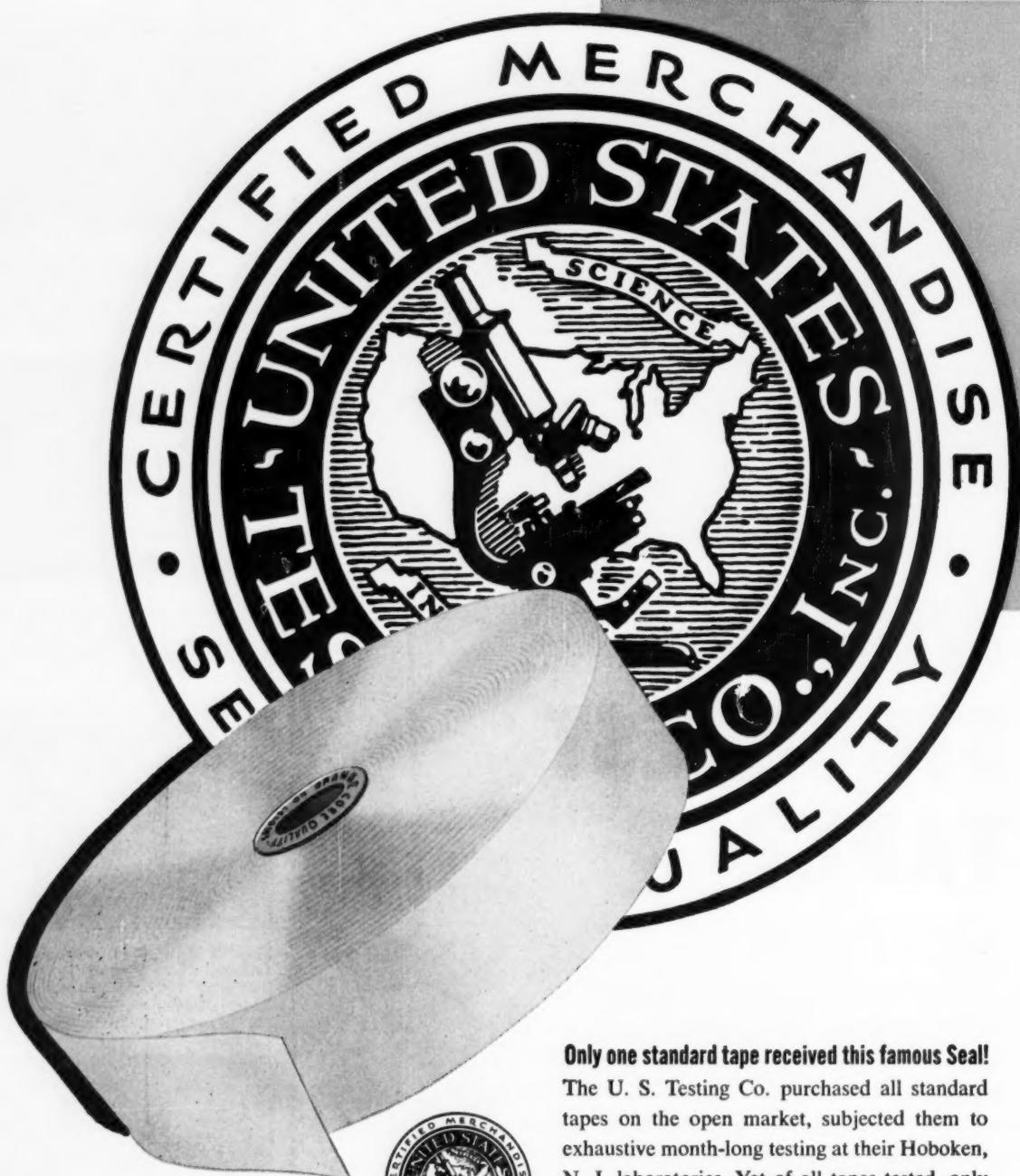


SECURE drum lids on shipping containers. New "mirror-surface" adhesive of "Scotch" Brand Filament Tape holds securely on smooth, curved, or irregular surfaces.



SPEED APPLICATION with new "Scotch" Brand Filament Tape Dispenser Model H-120. Complete, portable, and compact; saves time and makes application easier.

"Enough to make the



Only one standard tape received this famous Seal!

The U. S. Testing Co. purchased all standard tapes on the open market, subjected them to exhaustive month-long testing at their Hoboken, N. J. laboratories. Yet of all tapes tested, only *one* standard tape received the Seal of Approval—**Supple-ized® Orange Core**, the world's largest-selling tape!

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FLOW • SEPTEMBER, 1954

difference". . .

NOW! ORANGE CORE

**the world's largest-selling gummed tape is the
world's only standard tape with the exclusive**

U. S. TESTING CO. Seal of Approval

Now, don't guess which is the best tape—Orange Core has just been awarded the coveted Seal of Approval by the world-famous U. S. Testing Co.—the *only* standard tape to receive this famous Seal.

Orange Core users won't be surprised at this honor. They've discovered the consistent superiority of Supple-ized® Orange Core—enough to make the difference in time, labor and money—superiority that

makes Orange Core the world's largest-selling tape! And, there's a good reason for this leadership.

Only Hudson's "pines to paper" integrated control makes possible this superior tape at regular prices. Prove to yourself that Orange Core really offers 'enough to make the difference'. Make your next order Orange Core! Look for the U. S. Testing Co. Seal of Approval in every single carton!

ANOTHER SUPERIOR PRODUCT BY

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Orange Core Gummed Tape is another Hudson Quality Product—a member of the renowned family of Hudson Paper Napkins, Tissues, Towels, Blue Ribbon Super-standard Gummed Tape, Kraft Wrapping Paper, Grocery and Heavy Duty Bags, Multiwall Sacks and Laminated Wrapping Papers.



Standard Tape • Super Standard Tape • Napkins • Kraft Wrapping • Grocery Bags • Multiwall Sacks

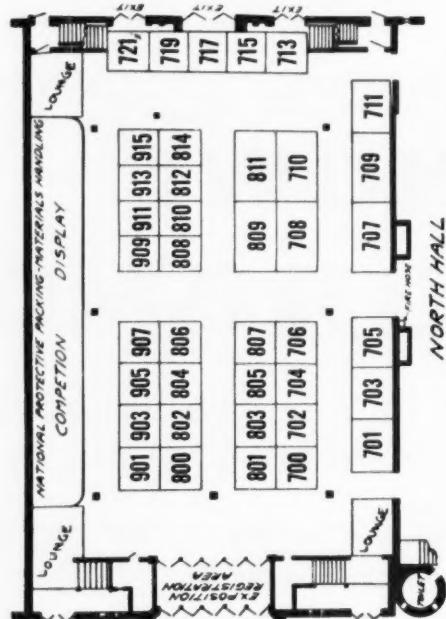
It's easy to prove to yourself the superiority of Orange Core. Send for free trial roll plus booklet, This Clipping Will Help You Clip Your Costs!

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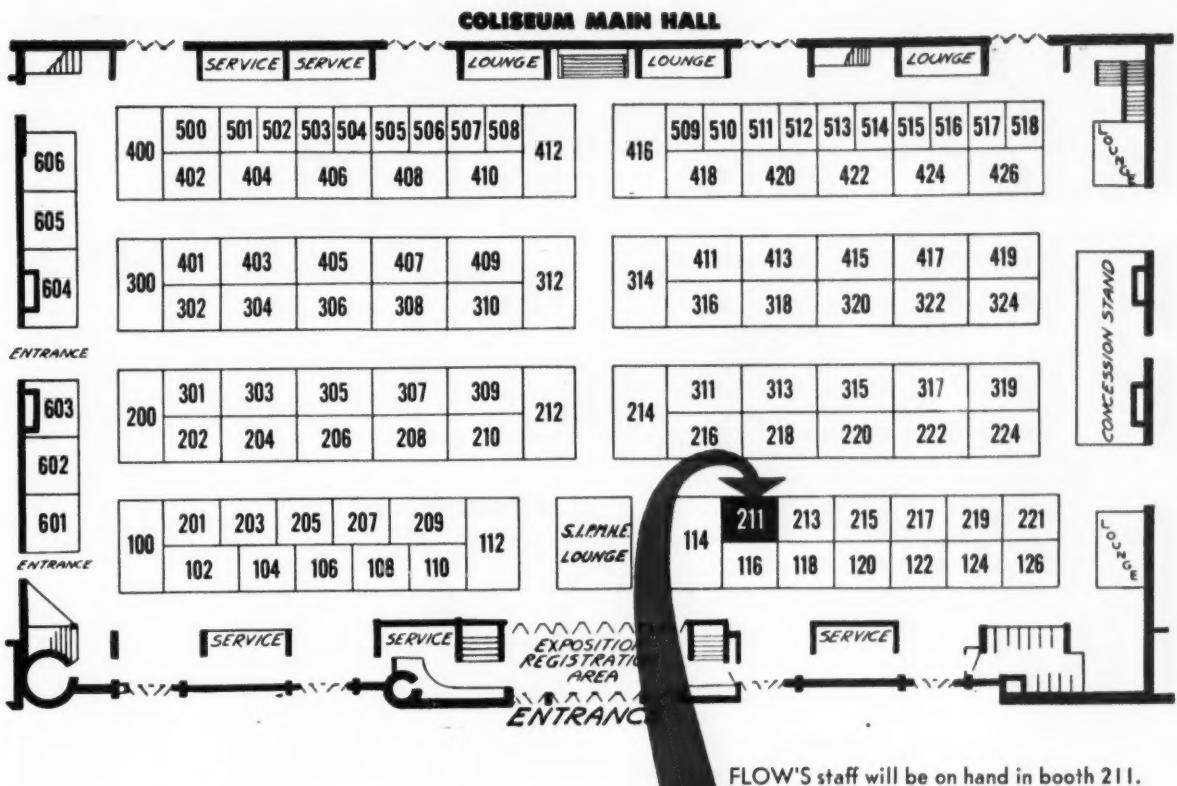
COLISEUM NORTH HALL



You Shouldn't Miss It . . .

9th Industrial

Company	Booth No.
Packmasters	517
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Paslode Company	506
Post Machinery Co.	315
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FLOW'S staff will be on hand in booth 211.

Packaging & Material Handling Exposition

WHAT — The ninth annual convention of the Society of Industrial Packaging and Material Handling Engineers.

WHEN — September 28, 29, 30.

WHERE — Chicago Coliseum, Chicago, Illinois.

AGAIN this year, as in the past, the S.I.P.M.H.E. convention will be a three way affair consisting of:

1. *The National Industrial Packaging and Material Handling Exposition.*

Chairman of the exposition has been announced as Jack L. Ware, American Excelsior Corp., Chicago. Using repeat reservations as a gauge of industry acceptance, Ware has stated that the show (expected to be considerably larger this year than ever before) is constantly exerting greater appeal to all branches of packaging and material handling. Exhibit space has been sold in both the hugh Main Coliseum and in the adjacent North Hall.

2. *Short Course Program (Sept. 27, 28, 29, 30)*

Under the chairmanship of Walter J. Byrd, Standard

Brands, Inc., New York, the Short Course, co-sponsored by S.I.P.M.H.E. and the University of Illinois will be expanded to include a new section on Fundamentals of Material Handling in addition to previously developed session on Fundamentals of Packaging and Executive Packaging and Material Handling lectures. By starting the short course a day earlier than the exposition, it has been possible to increase the number of sessions in each category to make each more comprehensive as possible.

3. *The 1954 National Protective Packaging and Material Handling Competition*

Restricted to users of packaging and material handling equipment, the competition is slated to have over 300 entries. Chairman R. A. Mantz, International Harvester Co. has announced that there will be seven distinct classifications in which entries will compete. They are: 1. Corrugated or Solid Fibre Boxes; 2. Nailed Wood Boxes and Crates; 3. Wirebound Boxes and Crates; 4. Cleated Panel Boxes; 5. General; 6. Export Packages; 7. Material Handling.

All groups will be judged by committees of engineers in their respective fields.

Model A Bagpaker® makes one man a team



The Model A Bagpaker® makes large tonnage bagging of free flowing materials a one man operation—and up to 350 tons can be bagged per 8 hour shift without overtime.

All the operator does is hang the empty bags on the filling spouts. Accurate weighing, filling, settling and sewing are fully automatic.

Engineered and manufactured by Bagpak Multiwall Bag experts, the Model A Bagpaker® is designed for reliability and durability. It can be depended upon to give years of service—and to pay for itself in as little as one year. If you are interested in the utmost in economy and efficiency in packaging bulk materials, you'll want to have all the details on this on this efficient machine. For complete information on how the Model A can fit into your packaging picture write to:

International Paper Company, Bagpak Division
Dept. L-17, 220 E. 42 Street, New York 17



International Paper

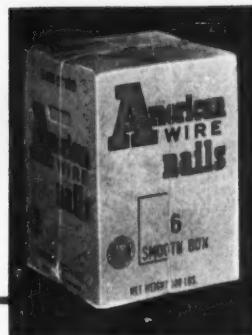
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FOUND:

More Floor Space . . .



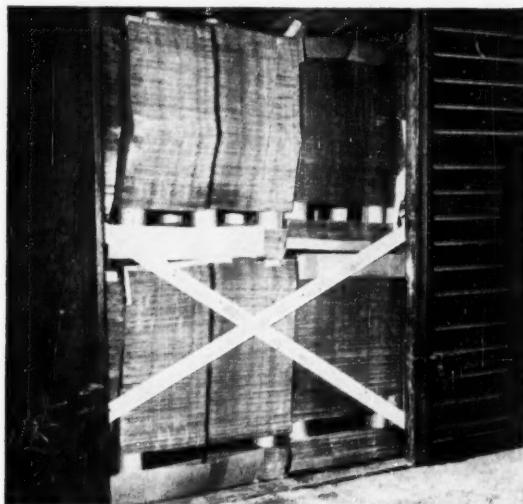
. . . 30% more storage space for the customer . . . 75%
more storage and assembly space for the manufacturer.

Greater ease in handling, availability of additional warehouse space, less container damage, all-round added convenience and more attractive package appearance are the principal "plus" factors for customers as a result of a nail packaging program recently completed at the Rankin Works, American Steel & Wire Division of U. S. Steel Corp.

A New Container

Success of the program can be attributed largely to the development of the corrugated nail box in which Rankin Works now ships all the nails it pro-

duces. Many proven advantages are inherent in the switch from kegs: (1) Floor space required to warehouse the new nail packages, when filled, is one-third less than is necessary to accommodate an equal number of wooden kegs; (2) Storage and assembly space requirements at the Rankin Works are more than 2/3 less; (3) The new package is much more easily handled, either in single units or in pallet-loads; (4) It is safer to handle; (5) When dropped, the corrugated box will remain intact rather than split open (and permit contents to spill on the floor); (6) When opened at a building site, the new container does not have



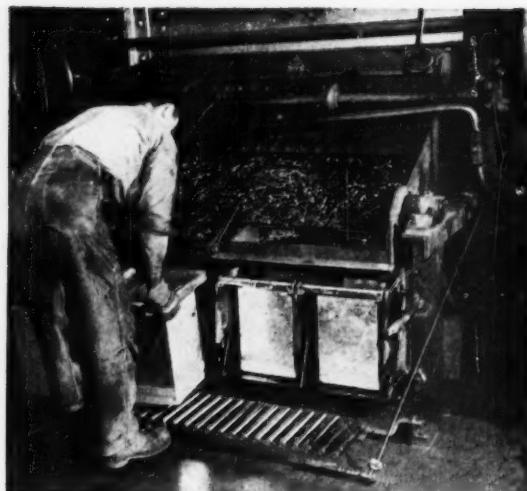
PALLETTIZED KNOCKED-DOWN NAIL BOXES utilize all space in box car when shipped from supplier to American Steel and Wire's Rankin Works. This carload contains approximately 15,000 boxes. There are 100 pallet loads, 50 made up of tops and 50 of bottoms.



FORK TRUCK is used in unloading cars and in storing palletized boxes. Compactness of this method has permitted the company to save approximately 75% of the space formerly required for storage and assembly of containers which it uses for the shipment of nails.



SIDE-ARM STITCHER is used in assembly of tops and bottoms of nail boxes. As operator removes knocked-down unit from inclined rack at his right, he folds it so that it has a double thickness on two sides, single thickness on remaining two sides and triple thickness at end. Outer seams are stitched along entire length and inner seams are each given a single stitch near the top.

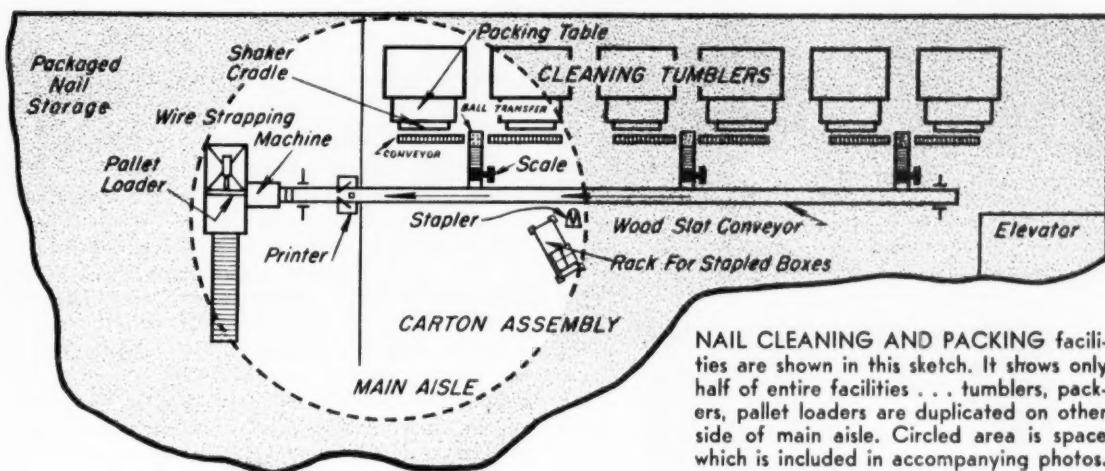


ROLLER CONVEYOR SECTION folds down during loading and unloading of shaker which vibrates nails into boxes. Sleeves which operator slips over boxes support their sides during shaking. Guide bars at the tops of sleeves cause nails falling into boxes to turn in one general direction for tighter packing and to reduce the possibility of in-transit damage to boxes.



CONVEYOR SCALE is used to check each box of nails to insure 100 pounds per box. Roller conveyor sections on shakers at right and left in background are in up position. This permits them to act as gates to hold con-

tainers in place during violent shaking. Filled boxes are pulled out of shaker . . . onto conveyor . . . around 90° turn on ball transfer and sent to weighing station. After weight is checked, tops are slipped over box bodies.



NAIL CLEANING AND PACKING facilities are shown in this sketch. It shows only half of entire facilities . . . tumblers, packers, pallet loaders are duplicated on other side of main aisle. Circled area is space which is included in accompanying photos.

More Floor Space . . .

Continued

nails protruding into the top opening (upon which hands or arms can become snagged); the flat sides and top permit printing of designs and other legends, in color, to increase ease of identification and to add to the general appearance of the package.

The box is a telescoping type unit made of 275-pound, single-wall B-flute kraft (in which a water-proof-type adhesive is used). It consists of two die-cut pieces, one which is folded and stitched to form the bottom of the box, and another which becomes the top. A row of wire stitches is used along the two outer seams and a single stitch is placed at the top of two inner seams of each section of the box. When folded into shape, a section has a double thickness of board on two sides, a single thickness on the other two sides, and a triple thickness at the closed end. For use, the top is slipped over the bottom so that double thicknesses on one unit are adjacent to single thicknesses on the other. Thus, a completed container has triple thicknesses of board on all six surfaces (four sides, top and bottom). It was found that this construction and assembly provided sufficient strength to permit filled containers to be stacked six-high in the warehouse and to enable them to withstand puncturing by nails during handling and shipping.

Five different size containers are used, varying from 8 x 8 x 14 inches to 12 x 12 x 14 inches. Each container holds 100 pounds of nails and the variations in containers size are necessary for accommodation of all sizes of nails.

Receiving and Storage

The first problems attacked by the new program

were those of handling and storing container materials as they were received from the manufacturer.

With the new program, knocked-down corrugated boxes are shipped to Rankin Works in regular-shaped strapped unit loads, each of which contains 300 of either tops or bottoms. Incoming carloads of materials contain about 100 units (50 unit loads of tops and 50 bottoms . . . or 15,000 complete boxes.)

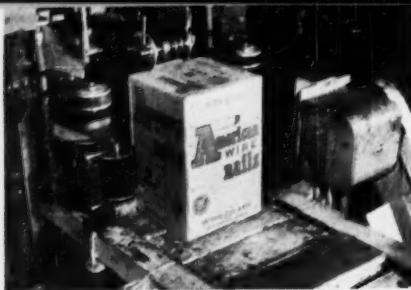
Unloading of cars is by hand lift and fork truck. Unit loads are delivered directly to the packaging materials warehousing area (and stacked three or four high) as they are removed from the car. Thousands of square feet of space have been saved in the packaging materials storage area alone and one of the immediate beneficial results has been additional warehousing space for the plant's other products.

Container Assembly

Container set-up under the new program has been greatly simplified and speeded up. Furthermore, it is now being accomplished in far less space than before . . . where it was formerly necessary to have a complete keg-making shop near the container materials storage warehouse, it is now necessary to use only a small area adjacent to the filling operation.

Nail filling equipment is arranged immediately in front of 12 huge nail tumblers arranged in two rows of six. They clean and pack the plant's entire output of nails. For each of the rows of six tumblers the following box assembly equipment is required:

1. A side-arm electrically operated wire sticher.
2. A box-forming device consisting of a slanted rack (to hold a quantity of knocked-down tops or bot-



CONVEYOR LINE MARKER is mounted around wood slat conveyor which carries filled boxes to wire-tying and palletizing area. Type of nail, size, special features, etc. are printed here. Electric eye, at right of conveyor, keeps production count.



SEMI-AUTOMATIC WIRE TYING MACHINE (inset) tensions, ties and cuts-off wire after it has been wrapped around box by operator. Two lengths of wire are placed around each box. Then, boxes are pushed onto . . .

PALLET LOADER (large picture) which operates as follows: Boxes are accumulated on steel plate until there are enough for a complete tier. For first tier in load,

More Floor Space . . .

toms in a position which is most handy for the stitcher operator) and a folding jig.

3. A platform to hold tops and bottoms after they have been formed and stitched.

To form top or bottom, the operator pulls a flat die-cut sheet down from the slanted rack and into the folding jig. Sheets are scored to make folding easier and faster.

Folded units are stitched on the side-arm stitcher and are then stacked on a table-high collecting platform spotted close by. Using this method, one operator can assemble and stitch 240 pieces (120 cartons) per hour. After they are completed, tops and bottoms are carried manually from the collecting platform to the individual filling stations.

Filling

Cleaning and packing of nails are accomplished in one department in a continuous series of operations.



section of roller conveyor elevates and positions pallet directly under steel plate. Operator positions control lever to cause hydraulic pressure to slide plate toward the left, back rest holds boxes stationary so that plate slides out from under, depositing boxes on pallet. For second tier, roller conveyor lowers to floor, plate returns to original position, over the first tier, and the pallet-loading operation is repeated to complete load.

As previously mentioned, the department contains 12 tumbler-packer units located in rows of six along two opposing walls. Nails are brought in from the manufacturing department in hand-wheeled buggies. An elevator raises them to a balcony which runs over both rows of tumblers. When the system is in operation, nails are dumped from the buggies directly into the tumblers for cleaning. After cleaning, the nails fall onto inclined packing tables which feed nails into containers.

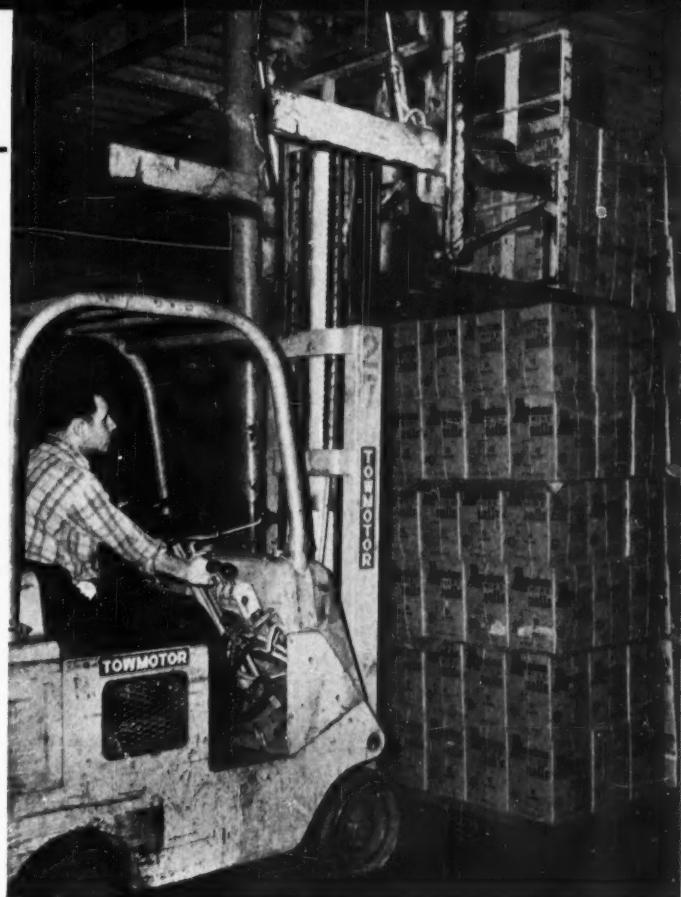
Boxes to be filled are inserted in shaker cradles located in front of the packing tables. Each of the cradles holds five boxes. A gravity roller conveyor section running along the front of each shaker cradle is hinged along one side so that during filling operations it can be folded up as a protective gate. After containers have been filled, the conveyor is folded down to expedite handling away from the shaker.

Here are the steps which would be followed in one filling cycle . . .

1. Operator inserts a snug fitting sleeve over each of the five boxes to be filled. The sleeve serves two purposes . . . (a) it provides support for the box during the violent shaking which will follow, (b) guide bars at the top of each sleeve cause nails to turn in the same general direction as they fall into the container. This provides tighter packing and prevents damage which might occur if nails pointed in many directions.
2. As a sleeve is slipped over each container, the container is pushed into place in the shaker cradle.
3. When all five boxes are in place, the roller conveyor section is folded up to serve as a retaining gate. The shaker vibrates on an eccentric mounting causing nails to move downward from the packing table, through the guide bars on each sleeve and into the boxes.
4. After the boxes have been filled, the shaker operator folds down the hinged roller conveyor and pulls out the boxes. He removes the protective sleeves, pushes the boxes to a ball transfer just off to one side of the hinged conveyor, pushes them around a 90-degree turn and onto another roller conveyor which carries boxes to a weigh-station.

The weigh-station is simply a scale with a section of roller conveyor in place of its platform. A filled box rolls right onto the scale, is weighed, and nails are added or removed to bring weight to exactly 100 lb. Since all corrugated boxes weigh the same, the scale is set for a constant tare, thus speeding up the weighing operation.

After weight has been corrected, a top is placed on the filled box, and it is pushed onto a wood slat conveyor which transports it to another department where



PUSHER ATTACHMENT on fork truck permits highly efficient use of storage space (30% less than previously was required) in packaged nail warehouse area. An entire unit load of boxes is stacked at once without pallet.

it is marked, wrapped with wire and palletized for storage.

Preparation for Storage

The wood slat conveyor carries filled boxes up a slight incline and through a wall which separates the cleaning and packing area from the palletizing and storage area. As boxes go through the wall opening, they pass an electronic counter which provides an accurate record of production.

After passing through the wall, the containers move through a conveyor line marker which prints nail size, nail type and special information, such as coatings, special heads, etc., on the box. The information is printed on three sides at one time.

Wire-tying is done on a semi-automatic unit. An Operator pulls each box from the slat conveyor and onto the wire tying machine. When a box is in position in front of him, he wraps a single strand of wire around it, depresses a lever, and the machine does the rest . . . it tensions, ties and cuts-off the wire. Two strands at 90-degrees to each other are tied around every container.

A unique pallet-loader has been devised by American Steel and Wire's engineers to place completed

packages on pallets for fork truck handling into storage. Basically, the loader is made up of a roller conveyor which can be elevated

and a heavy steel plate that slides back and forth above the conveyor. When a load is to be built up, a pallet is placed on the roller

conveyor and is elevated to just beneath the steel plate. Boxes are accumulated on the plate by the wire-tyer operator until there are enough for a full layer. A 90-degree "V" formed by a back plate and guide bar receive boxes as they are pushed onto the plate. This helps to build more stable loads and the back rest aids in the next operation.

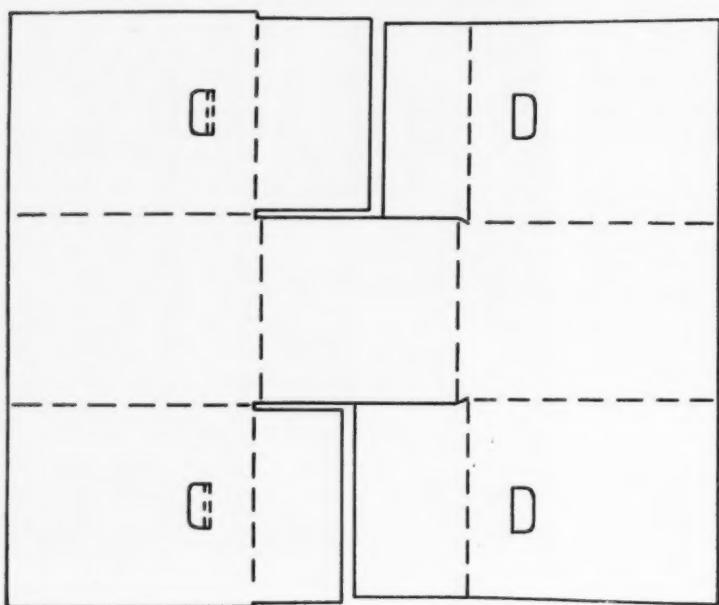
When a full layer has been accumulated, the operator pulls a lever and, through hydraulic power, the plate slides out from under the boxes, (which are held stationary by the back-rest), depositing them on the pallet. Then, the conveyor is lowered to the floor, the steel plate returns to its original position, and another layer is made up. It is then deposited on top of the first layer by the same action of the moving plate.

Several Pallets Used

The entire load is then moved away from the pallet loader. It is picked up by a fork truck and carried to a nearby storage area. Experimental work is being carried on with several types of "take-it-or-leave-it" pallets. A pusher attachment is now being used on the truck to remove unit loads from pallets as it stacks them. This, of course, helps to reduce space requirements further.

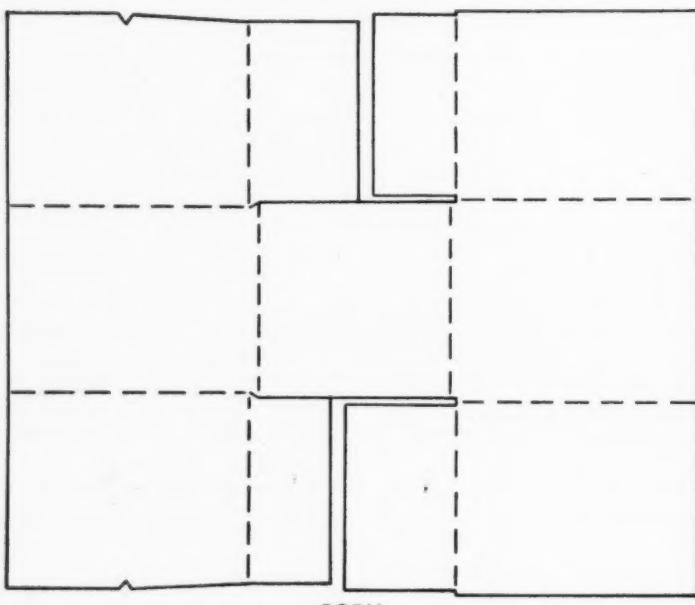
The plant ships approximately 342,000 containers of nails per month. Total space required for storage, assembly and filling of boxes is only 8250 square feet. This, when subtracted from the 33,500 square feet formerly used, leaves Rankin Works with 25,250 square feet of space which it can now put to use in helping relieve congested conditions in other parts of the plant. Before the development of the new packaging program, it appeared that only through a plant addition could that additional space be acquired.

Flow's thanks to Hinde & Dauch Paper Co. (who worked with American Steel and Wire in developing the nail box) for photographs used in the preceding article.



COVER

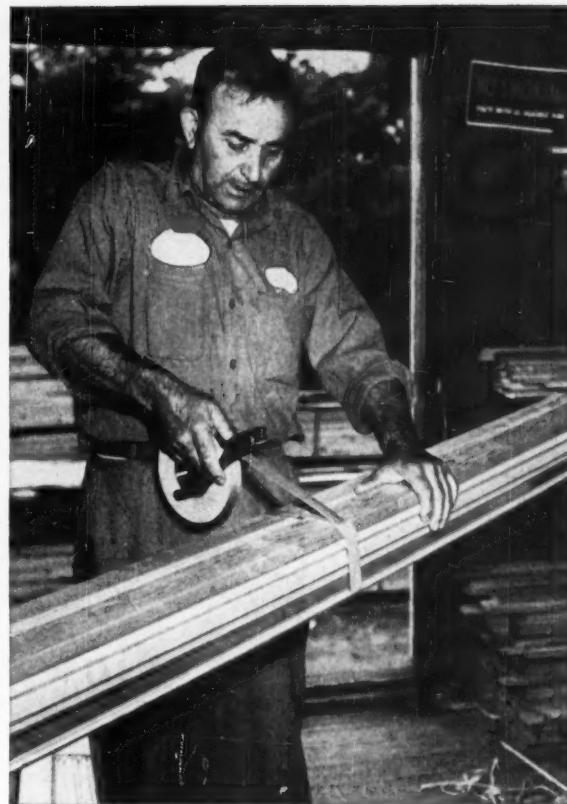
KNOCKED-DOWN NAIL BOX consists of two flat sheets, one for cover, one for body. To make a model of the box, cut out sketches on solid lines and fold on dotted lines.



BODY



STEEL STRAPPING ↑



↑ STRAPPING TAPE



Use Brainard's complete service!

... STEEL STRAPPING AND STRAPPING TAPE

BOB WHITTAKER ... SALESMAN—BRAINARD'S CLEVELAND OFFICE.

TRAINED Brainard salesmen, like Bob Whittaker of Cleveland, know after their job analysis whether steel strapping—or strapping tape—is called for . . . are then prepared to recommend and demonstrate whichever method is best for you.

In lumber yards, for example, there is a need for both methods.

For banding the large unit load of rough lumber shown above, Bob Whittaker recommended Brainard heavy duty 1 1/4" steel strapping. Results: savings in time and labor in handling and delivery for both yard and contractor. For bundling orders of finished material, like molding, into snug packages, Brainard strapping tape was the choice, because it can

easily be applied in no time at all —leaves no nicks or dents in the wood!

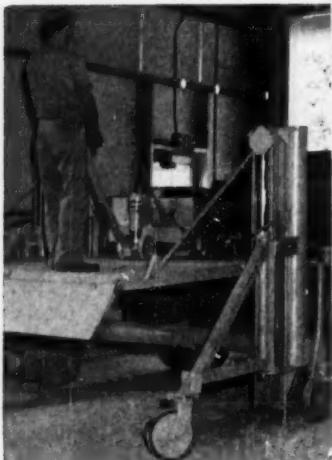
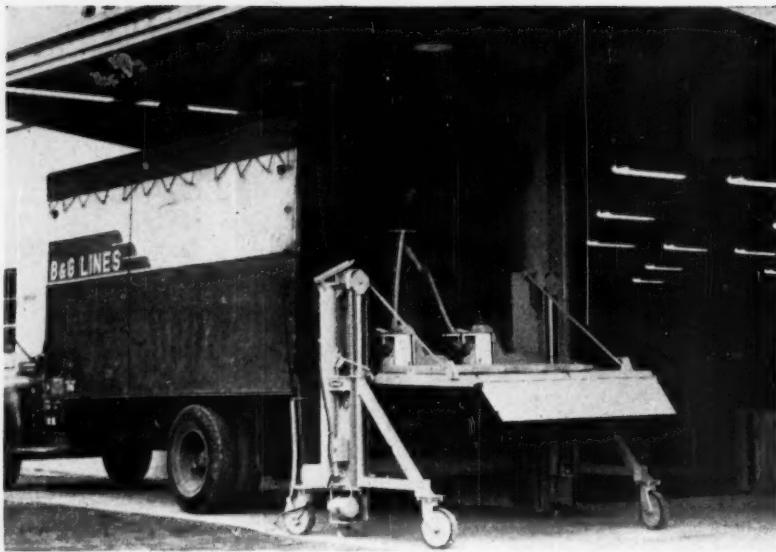
Why not ask for a Brainard strapping analysis, and determine if you can make substantial savings in your packaging and shipping costs. Call your Brainard salesman today—we have offices throughout the United States and Canada.

*For complete information write
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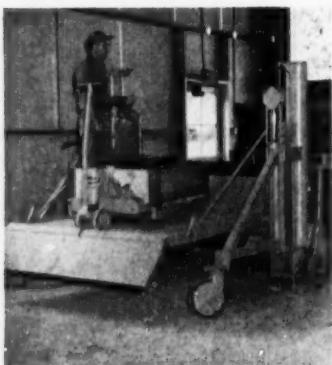


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Shipping Idea of the Month



PALLET-LOAD OF PARTS is delivered by truck from main plant to assembly plant. No permanent receiving dock is needed because this dock can be wheeled wherever truck is to be unloaded.



PALLET TRUCK pulls load from delivery truck onto platform of dock. Hydraulically operated platform then lowers to the floor.

How to Load Trucks from Ground Level

by George G. Raymond, president

The Raymond Corp.

With the increased use of pallets, skids, bins and other unit loads for shipping, the problem of loading and unloading motor trucks from ground or floor level has become more and more acute. When The Raymond Corp. began drawing up plans for a new manufacturing plant, the subject of truck loading and unloading took on added significance.

We had to decide whether to elevate the plant floor to accommodate permanent loading docks or to devise some other solution. Truck wells and permanent elevators were considered and abandoned because they required fixed locations that would hamper future building. None of the other methods of loading and unloading seemed satisfactory.

Our engineers set to work on the problem and the result was a portable loading dock with hydraulic elevating platform. It is a 6000 pound capacity unit which rolls right up to the tail gate of a truck and elevates and lowers a platform hydraulically.

An ingenious arrangement is used to permit the platform to fold up (also by hydraulic power) for storage in extremely little floor space.

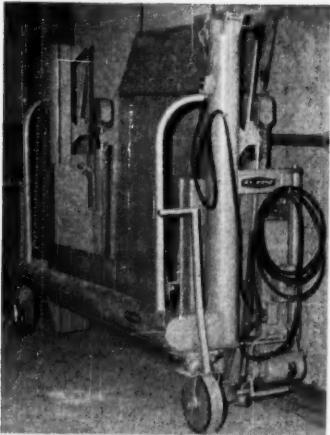
The loading dock is now in service in our new assembly plant which is located about a quarter of a mile away from our main plant.

How Incoming Shipments Are Unloaded

Parts are placed on pallets or skids, following manufacture at

Many years ago George Raymond Sr. wrote for Industry and Welding, the first magazine ever published by this company. In those days he used to describe his welding jobs and how he applied welding to his early products. Now he has again written an article to describe an interesting device he originally described to me as "The Thing". I welcome George back as an author.

Irving B. Hexter
Publisher



FOR SHIPPING (left), portable loading dock is moved outside. For storage (above) it folds up and can be rolled out of the way.

the main plant. They are loaded onto motor truck by hand trucks for transfer to the assembly plant. On arrival, the portable dock is moved up to the truck's tailgate and a hand truck is drawn onto the elevating platform. The platform is raised to the height of the truck and the skid or pallet load is drawn onto the portable dock for lowering to the floor. On removal from the loading dock, the parts are picked up by electric trucks for transporting to storage racks or assembly floor.

Miscellaneous shipments delivered by our suppliers are not always received on pallets or skids. In such cases, they are placed on pallets or skids while on the delivery truck or on the portable dock platform. Then, they are lowered to the ground for the usual transportation into the plant.

Most outgoing shipments from our assembly plant are either hand trucks or electric trucks. The former are drawn onto the loading dock, elevated to truck height, then drawn onto the vehicle. The electric trucks are handled in a similar manner, except that they are driven under their own power onto the loading dock and onto the motor truck.

When shipping electric trucks with overall heights exceeding 83 inches, we roll the portable dock outdoors for the loading operation. The ease with which it can be moved has proved advantageous in such cases.



IT'S THILCO'S NEW, TOUGH *Machine Creped, Elasticized* Wrap-DRI PAPERS—TYPE MR AND JR



New, dispersed fibre reinforcing for unusual toughness and strength — plus machine creping for extra flexibility and cushioning... That's the combination that makes Thilco's type MR and JR asphaltated waterproof papers your best bet for economical, heavy-duty protective wrapping. With Wrap-Dri you get three-fold packaging superiority —

1. **FLEXIBILITY** — Extra pliability and ease of handling speeds up wrapping production — cuts skyrocketing labor costs.
2. **CONFORMABILITY** — Added stretch and moldability permit snug-tight wrapping of the most irregular shaped products.
3. **EXTRA STRENGTH** — Machine creping with its cushioning effect, built-in-stretch base kraft, flexible double-coated laminants and reinforcing fibres with edge strings, all add up to superior strength — higher resistance to puncture and tear.

There's a Wrap-Dri grade for every need. Type MR machine creped for a heavy duty and JR machine creped for utility use — both available in wide widths up to 10 ft. without lap or seam. Wrap-Dri gives excellent M.V.T. protection and can be furnished mold-proofed or "special treated" to meet most any specific requirement — plus print decorating for product identification. Write for new fact folder today!

THILCO

Functional Papers FOR PROTECTION THAT COUNTS!

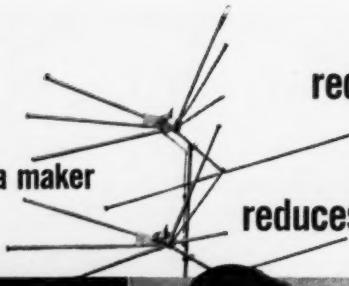
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JFD

New York TV antenna maker



reduces shipping costs 30%

reduces shipping time 75%
reduces loss and damage claims 80%



with *International Staplers*

JFD Manufacturing Co., Brooklyn, N. Y., makes the JETenna TV antenna and packs and ships it in corrugated cartons. Previously, they closed their cartons with gummed tape with sodium silicate glue. Here's why they switched to International Staplers:

1. We achieved a 30% saving in shipping costs when we switched to the stapling operation.
2. We cut our packaging time by 75%.
3. We reduced our loss and damage claims due to carton failure by 80%.
4. Our package is now more attractive and *more saleable*, merchandising wise.
5. Structural strength of the product has been increased, allowing higher stacking, better handling and more efficient warehousing.

6. Climatic conditions do not affect stapling, where formerly, the glue dried before it adhered the gummed tape to the carton."

Want to reduce your shipping costs? Cut packaging time? Minimize damage claims? Investigate the advantages of International Staplers.

There are more than 20 models to fill your needs—from manual to completely automatic units. They are cost reduction specialists. They give you better closures, more attractive packages—and in many cases, pay for themselves in a few months.

Let your International representative help you make a cost reduction survey of your shipping department. There's no obligation and you'll be glad you did.

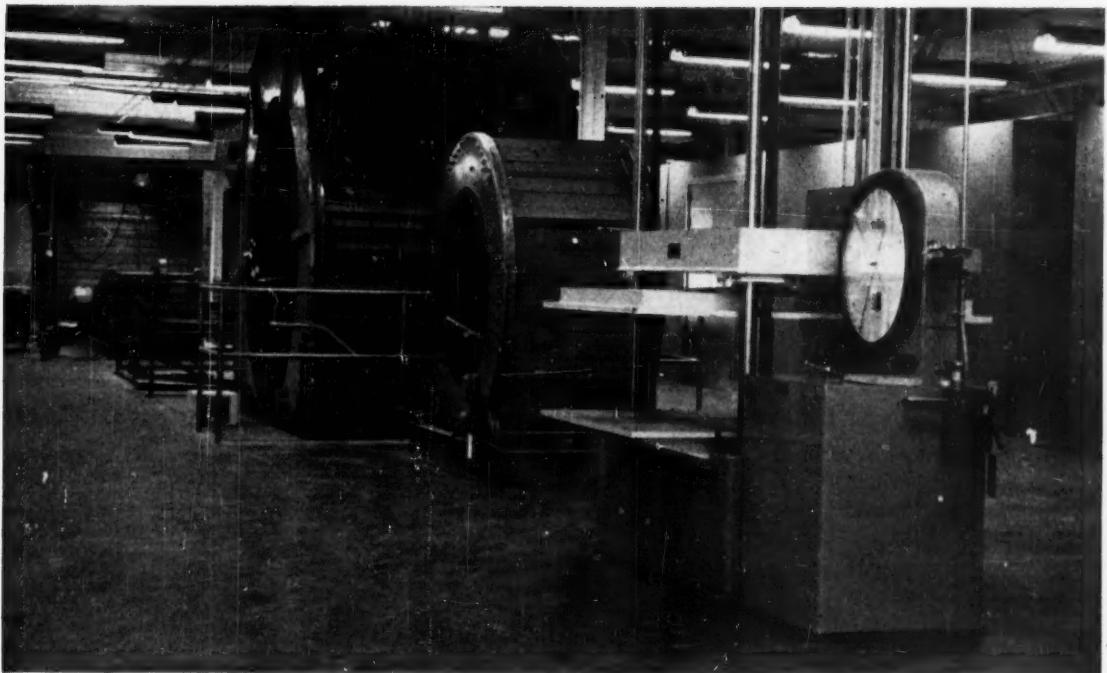


International Staplers

808 East Herrin Street, Herrin, Illinois

International Staple & Machine Company

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FULLY EQUIPPED LABORATORY at Rossford Ordnance Depot is a far cry from facilities, with which first package testing engineers worked, over forty years ago. Facilities like this usually include an incline-

impact tester, revolving drums, compression tester, vibration tester, drop testers, and a number of devices which make it possible to test packaging materials and containers under varying climatic conditions.

What's ahead for . . .

Package Testing Techniques

by E. H. Borkenhagen*

Since the idea of package testing first saw the light of day about forty years ago, there has been considerable progress in the development of procedures and techniques and in an understanding of the many problems involved. And yet, we are today faced with almost as great a challenge as were D. L. Quinn of the Don L. Quinn Laboratories, T. A. Carlson of the Forest Products Laboratory, Albert Leurs of the Container Laboratories, Inc., E. B. Stivers of the Package Research Laboratory and others of that era when the first package testing techniques were developed.

Basically, there were then, and still are, three major problems confronting container testing engineers: (1) What are the forces with which we are concerned;

(2) What tests are available; (3) How can the tests be made to duplicate actual conditions? By taking them up individually, we find that both the progress which has been made and the long road still ahead become quite clear.

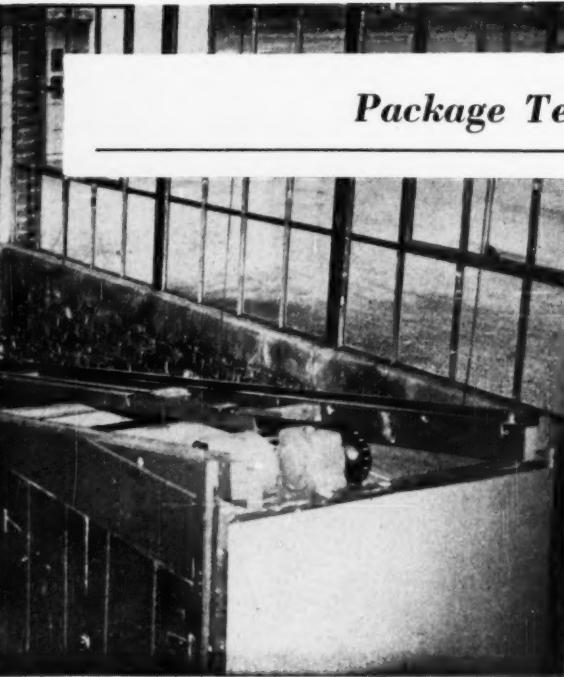
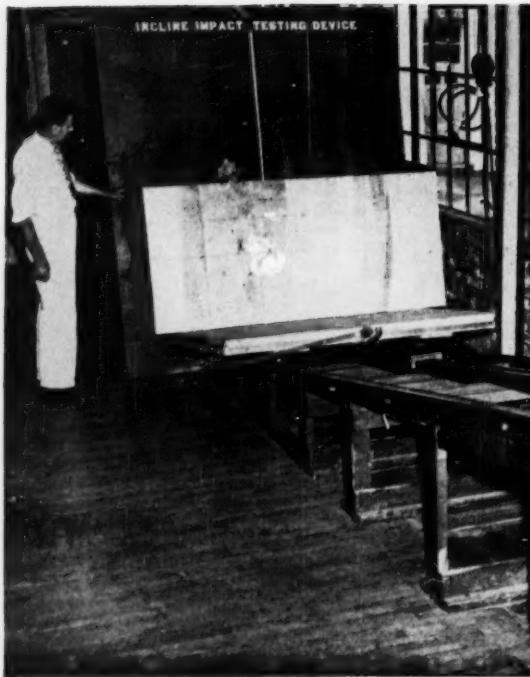
1. What specific types of forces and what amount of handling are containers subjected to?

We have been able to gather a good deal of information on the types of forces to which packaged products are subjected during handling, storing and shipping. We know much about what happens when the following four forces act on a package:

- a. *Sharp sudden impacts . . .* These are caused by drops which range in height from three inches (rolling or pushing heavy packages during

*Chief, Technical Division, Ordnance Packaging office, Rossford Ordnance Depot, Toledo 1, Ohio.

Package Testing

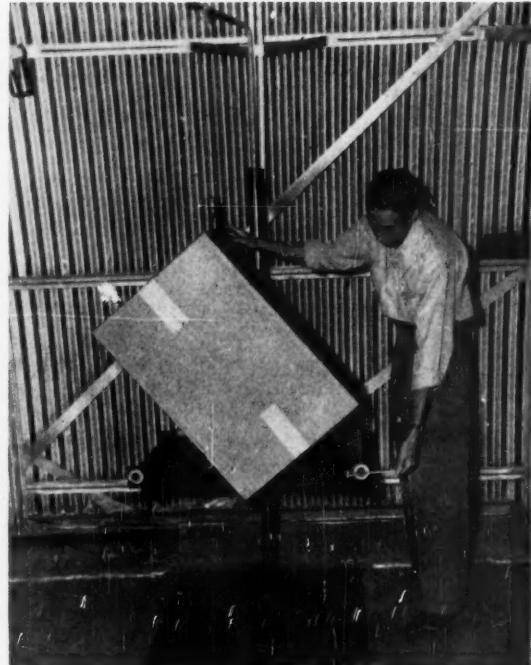


INCLINE-IMPACT TESTER consists essentially of, a two-rail steel track inclined at an angle of 10 degrees, a dolly which rides on the track and a rigid

bumper at the lower end. It is used to simulate sudden impact forces that packages are subjected to as a result of sudden stops or starts while in cars or trucks.



DROP TESTERS are among the most common devices used in simulating stresses and shocks normally encountered before merchandise reaches the user. Unit at left is suspended from a hoist and tests heavy



packages. At right is a drop tester for packages weighing less than 100 pounds. Drops follow a planned sequence, on corners, ends, and sides, designed to give packages roughest handling they normally receive.

Techniques . . .

Continued

- handling) . . . to forty-two inches (dropping packages from tail gates of delivery trucks, etc.)
- b. *Sudden shearing impacts* caused by the starting or stopping action of freight cars and trucks.
 - c. *Large compressive forces* placed upon packages when they are stacked in warehouses, or on docks, or when they are loaded in railroad cars, trucks, in the deep holds of sea-going vessels, etc.
 - d. *Vibration forces* placed upon them when they are shipped in cars, trucks, ships, airplanes.

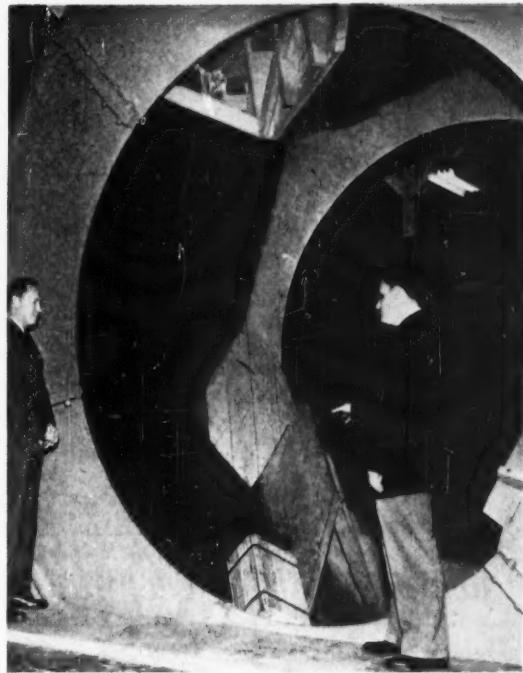
But there is one vitally important category in which we still do not have nearly as much information as we would like. That regards the amount of handling to which containers are subjected. This includes questions as to how many and what types of handlings a package will encounter from the time it leaves the manufacturing facility until it arrives at the destination.

2. What specific types of laboratory tests can we use to simulate the various hazards that packages are subjected to during transportation?

One can find numerous container testing laboratories in both private industry and the government. Several basic types of testing equipment are common to practically all testing labs, other special types are used to suit particular instances. The most widely used devices used to simulate and reproduce the various stresses placed on containers during shipment include; the revolving hexagonal drum tester, the incline-impact tester, the compression tester, the vibration tester and the drop tester.

The revolving hexagonal drum tester is used primarily to subject packages to the various stresses and distortions normally encountered during handling, storage and shipment. The device consists of either a 14-foot or a seven-foot diameter revolving drum within which there are six faces. On each face is mounted a hazard and guide so that as the drum revolves, the package being tested falls or slides and strikes on end, side, top, bottom, or edge. The 14-foot drum revolves at a speed of one revolution per minute and is usually used for testing larger containers (weighing not more than 500 pounds). The seven-foot diameter drum turns at a speed of two revolutions per minute and is used for testing containers weighing less than 100 pounds.

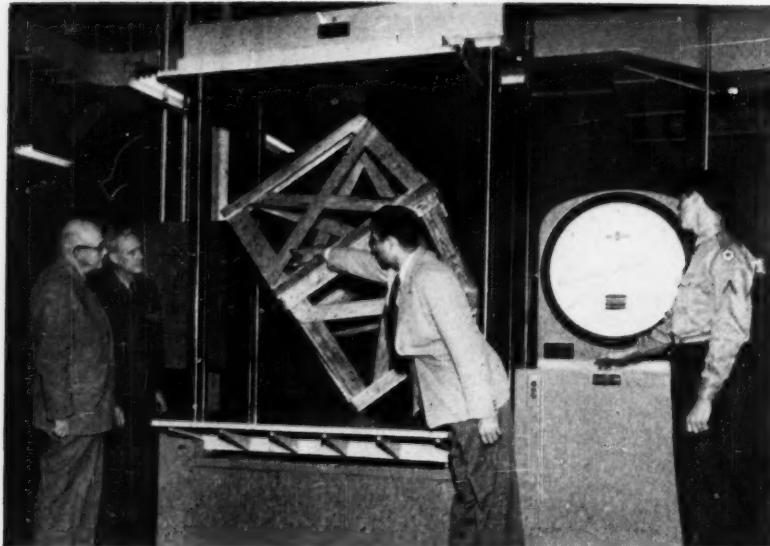
The incline-impact tester consists essentially of a two rail steel track inclined at an angle of 10 degrees with the floor, a dolly which rides on the track, and



REVOLVING DRUM simulates a variety of stresses, shocks and distortions. This one is 14 feet in diameter and turns at speed of one rpm. It is for packages weighing 100 to 500 pounds. Seven-foot drums, for packages which weigh less than 100 lb. turn two rpm.



VIBRATION TESTER simulates small repetitive forces that occur constantly during movement of a vehicle. Such forces are usually small in magnitude and cause little or no damage when limited in number. If repeated often enough they cause package fatigue.



COMPRESSION TESTER provides an excellent way for simulating loads which are imparted to packages in stacks in warehouses or in vehicles. Here, corner-to-corner test is being conducted on nailed wooden crate.

Package Testing Techniques

Continued

a rigid bumper at the lower end of the track. The test is used to simulate sudden impact forces that packages are subjected to as a result of sudden stops or starts during shipment.

The compression tester provide an excellent way



CONDITIONED AIR COMPARTMENT can be used to simulate almost any climatic condition. Since wide ranges of temperature and humidity can be reached and accurately maintained, performance of packaging materials in shipment or storage in any part of the world can be predetermined.

for simulating the loads which are imparted to a container which is in a stack in a warehouse, loaded in railroad cars or trucks, or when it is loaded in the hold of a ship. It consists of two platens which can be moved together, in a manner similar to the action of an ordinary vise, to apply a specific load to the test specimen. Some machines have automatic recorder attachments which measure the amount of load and movement of the platens during corner-to-corner, end-to-end, and edge-to-edge compression tests.

The vibration tester is essentially a table surface which is capable of being vibrated by mechanical means in a manner which makes it possible to simulate the smaller but repetitive forces that occur during movement of a vehicle. These forces are usually small in magnitude and a limited number of them cause little or no damage. If they are repeated long enough, they may cause a package to fail by what is commonly known as fatigue.

The drop test can be used by most anyone and has the advantage that it doesn't require a great deal in the way of specialized equipment. Drop testers usually consist merely of some means of lifting a package to a predetermined height and then of letting it drop on a corner, edge, or face . . . thus, again simulating the stresses and shocks normally encountered before the merchandise reaches the hands of the user.

In addition to the rough handling tests discussed above, it is often necessary to subject test packages to various climatic conditions. Testing laboratories equipped to conduct such tests usually have facilities which include a rain room, a high temperature and high humidity room, a deep freeze room, a standard conditioning room (73 degrees and 50% relative humidity), weatherometer, humidity cabinet and ovens.

In the hands of competent package testing engineers,

the above facilities can be coordinated into planned test cycles which will simulate the various conditions which packages may encounter. Such planned cycles are necessary to indicate the performance of cushioning, blocking or bracing and the container under various atmospheric conditions.

3. How much rough handling in the form of controlled laboratory testing is required to equal and reproduce the actual hazards a package will encounter?

It is obvious from the preceding discussion, that development of types of devices to simulate all possible conditions has been carried out to a great degree. It is safe to say, however, that there has been little or no reliable data published among container testing laboratories to indicate the type of test to use or the length of time to run such a test to equal or reproduce the kind and amount of handling which will be experienced in handling and shipping. For this reason any laboratory testing that is performed should usually be considered as a means of obtaining comparisons between different kinds of shipping containers, comparisons between different methods of packing, or comparisons between different packaging materials.

Such comparisons are quite easy to obtain through laboratory tests for the following reasons:

1. The laboratory tests can be controlled to such an extent that they are readily reproduced.
2. The numerous variables that exist in different packages can usually be limited to such an extent during one particular test that a difference in the answers obtained can be traced quite easily to an individual variable.
3. Definite laboratory tests can be decided upon in advance to produce desired types of simulated handling or desired stresses.

As stated earlier, the foregoing discussion covers the methods and procedures that have generally been used over the past 40 years. The information it contains is

(Continued on page 154)

For handling multiwall bagged materials



only MEAD CHESTNUT

POKE-PAK

can give you these advantages:

- **Freedom from maintenance.** No nails or splinters to puncture the bags—the load does not tip, because the center of gravity is low.
- **End to costly car floor lining.** By the POKE-PAK way, it is only necessary to line the ends of the car.
- **Bookkeeping cut to the bone.** No credits, charge-back and freight charges on returnable pallets.
- **Reduction in unloading and loading time** to a fraction of former time needed. It allows fullest use of limited dock facilities—does a better job faster.
- **Reduction of pallet storage space.** From 40 to 70 MEAD Chestnut POKE-PAKS will fit into the space required for one wooden pallet of the same size.
- **MEAD POKE-PAK consultant service.** Carloading diagrams, bag patterns, and samples all at no charge.
- **Adaptation to job.** Designed to fit one job only—your job. Tailor-made POKE-PAK is the perfect answer to odd size bags, for truck or rail shipments.
- **Pallet of great strength**—able to lift anything your fork truck will lift, yet so low in cost it can be thrown away after use.

MEAD Chestnut POKE-PAK is engineered to handle unit loads of bagged materials with any type fork lift truck. A sturdy rigid loading base, Chestnut POKE-PAK is manufactured from chestnut and other hardwood fibers. For complete information, write for descriptive brochure.

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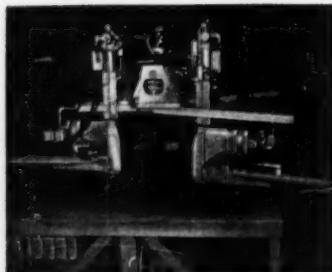
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MEAD
board

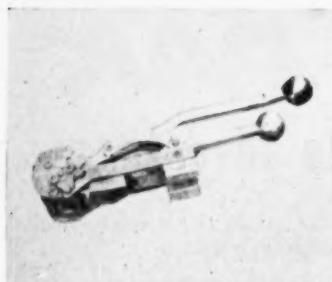
WHAT'S NEW... in Packaging and Shipping Equipment



Octagonal Carton Top-Stapler

International Staple and Machine Co. has announced a new model OTC Automatic Stapling Machine designed to staple hinged or unhinged lids on octagonal shaped cartons which have open square centers. It will handle cartons measuring 26 to 54 inches across the outside flats, with six to 20 inches square inside openings and varying in height from $\frac{3}{8}$ to two inches. The manufacturer claims that the machine greatly shortens change-over and stapling time.

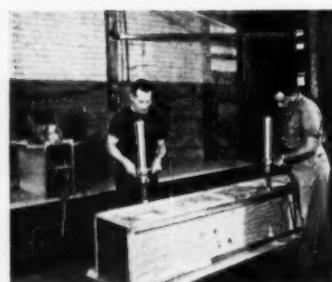
Circle No. 221 on Reader Service Card for more information



Universal Steel Strapper

A single tool for box strapping, industrial hose banding, insulating and similar jobs has been introduced by Universal Steel Strapping Co., Inc. With one-handle operation, the unit tensions, cuts and seals any size of steel strap. Its measurements are; 14 inches long, four inches wide and $4\frac{1}{2}$ inches high. Weight is four pounds. Manufacturer claims that the tool will put metal strap around any object in any position. It uses a closed-type seal.

Circle No. 222 on Reader Service Card for more information



Portable Nailer

A portable nail driver that has an automatic hopper feed and that sinks each nail completely with a single stroke of its pneumatic driver has been developed by Morgan Machine Co. With the machine, an operator is said to be able to drive 40 to 50 nails per minute for sustained periods and more than 60 per minute in brief spurts. Operation is by compressed air. Feeding unit of the namer weighs 65 pounds and the driving unit weighs $8\frac{1}{2}$ pounds.

Circle No. 223 on Reader Service Card for more information



Quick, Long-Lasting Corrosion Protection

A new addition to Shell Oil Co.'s line of volatile corrosion inhibitors is VPI-250. Portions of this crystalline amine nitrite compound volatilize rapidly to prevent rust almost immediately. Some of the inhibitor's constituents evaporate more slowly, for longer-lasting protection. The material comes as a white powder as fine as talcum, will not clog a flocking gun and can be applied with a squeeze bottle, salt shaker or similar device.

Circle No. 224 on Reader Service Card for more information

(Continued on page 163)



SHIPMENTS ARE SAFE ON THE UNION PACIFIC

Prominent among the cost-cutting innovations that have built the Union Pacific's fine record of shipper service is the Evans DF Loader. The Union Pacific supplies its shippers with cars equipped with this load-secur ing device at no extra cost.

The DF Loader locks in lading with cross members called "Wonder Bars" that take out all slack. These bars reduce dunnage and damage and permit faster loading and unloading. They divide a car into as many independent load units as desired . . . permit full use of load or cubic capacity. In

addition to increasing payloads, the Evans DF Loader reduces damage to car walls and floors; reduces damage claims; reduces car turnaround time and losses from unused car space. This increases revenue for the road.

Millions of damage-free ton miles on 39 Class I railroads prove the ability of the Evans DF Loader to produce these savings. Evans also supplies the Union Pacific with the famous Auto Loader. Write for DF Loader booklet to Evans Products Company, Dept. AF-9, Plymouth, Michigan.

NEW LOADING MANUAL FOR SHIPPERS AND RAILROADS

Send for a copy for your loading foreman • Illustrations and diagrams show how to load and unload cars equipped with DF Loaders • Shows how to plan your load, how to make extra tiers, how to load the door space • Contains examples of typical loads • Fits into pocket for ready reference.

This Manual Will Help You Cut Your Shipping Costs.



EVANS
PRODUCTS COMPANY

DF LOADER
LOCKS LADING INTO BOX CARS
TO ELIMINATE DAMAGE & DUNNAGE



Circle No. 56 on Reader Service Card for more information



Shipper Hits Savings Jackpot with new Unitizing Method!

A Signode unitizing method that can work for you!

Shipping textile machine parts always was costly for one manufacturer until he called in a Signode fieldman. A new strapped Unit-Pack was designed and tested—and the manufacturer soon realized that he had hit the jackpot in savings! He saved

74.2% in labor	74.0% in overhead
57.7% in materials	55.2% in container cost
26.0% in freight	

Here's the story: The manufacturer was shipping two cylinders for spinning or twisting frames. Becoming conscious of shipping costs, he sought a way to reduce his expenses. The Signode fieldman offered the solution—a double carton secured with tensional steel strapping.

Unitizing your shipments with steel strapping may turn expense into profits—damaged goods to safely delivered goods. It costs you nothing to find out what can be done. Send for our folder showing **6 BASIC WAYS OF UNITIZING!**

SIGNODE Steel Strapping Co.

2618 N. Western Ave., Chicago 47, Ill.

In Canada: Canadian Steel Strapping Co. Ltd., Montreal • Toronto
Offices coast to coast—Foreign Subsidiaries and Distributors World-Wide

Circle No. 143 on Reader Service Card for more information

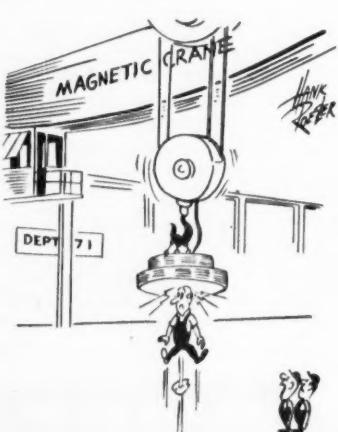
PACKAGE TESTING . . .

(Continued from page 151)

shared by numerous packaging engineers and the techniques and details of the tests themselves are usually based on the experience of the individual making the test. Recent innovations, such as the use of electrical recording equipment etc., show that more scientific approaches are being made toward package testing. There is a growing tendency to take more of the human element out of package testing and to replace it with instrumentation which provides accurate recorded data which can be applied intelligently to all phases of package engineering.

One of the results of that trend has been an ever increasing recognition of the importance of the broad field of packaging and that segment which has to do with container testing. Although it was not regarded very highly before World War II, it is now known to be a valuable ally in the constant battle against high costs of distribution.

The preceding article is from a talk presented before the Northeastern Ohio Division of the Society of Industrial Packaging and Material Handling Engineers. Photos used were through the courtesy of: Pacific Coast Branch Laboratories of American Gas Association; Package Research Laboratories; Packaging Service Corp.; U. S. Army.

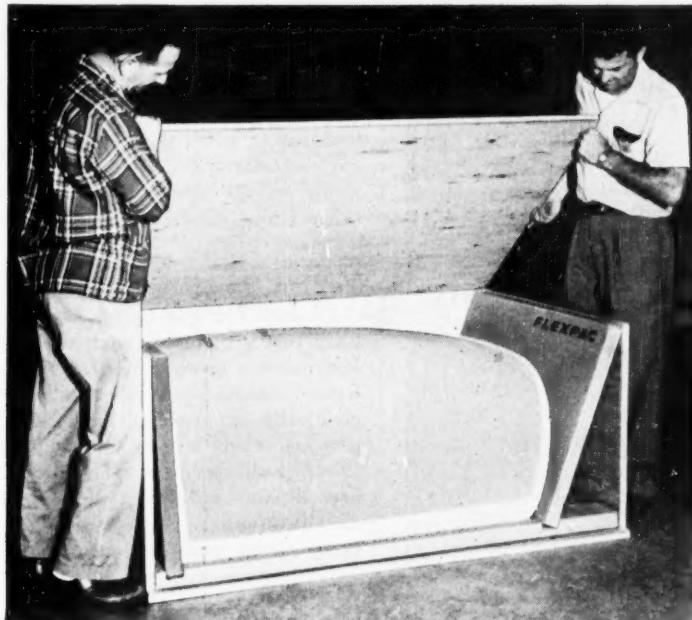
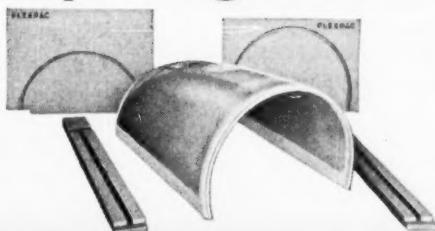


"Serves him right—always bragging about his magnetic personality."

**DIFFICULT
TO PACK**

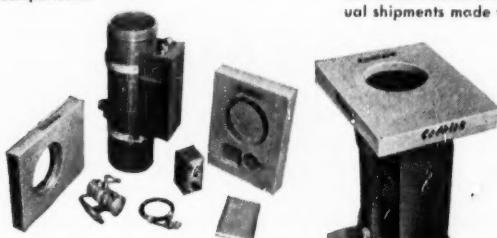
bulky plastic airplane canopies packaged securely in $\frac{2}{3}$ less time!

1. New inner pack design prevents "cold flow" of cockpit enclosure by affixing all parts of enclosure in prefabricated matching configuration. Gross weight of packaged enclosure is approximately 100 lbs. less than with former packaging method.



2. Aircraft engine cylinders are firmly "floated" within their shipping container by two prefabricated Celotex inner pack components.

3. These airplane cylinders and other Wright parts are packed in 1/5 the time formerly required . . . with simplified method using Celotex contour fitted fabrications. 100,000 individual shipments made without damage!



4. Using Celotex cane fiber board, packaging time for this auxiliary heater was cut from 4½ min. to 1 min., with dash-board controls fitting snugly into contoured areas fabricated in inner packs.



VISIT CELOTEX BOOTH 302, SIPMHE EXHIBIT, COLISEUM, CHICAGO, SEPT. 28-30

Circle No. 36 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

Fabricated Celotex Industrial Board Inner Packs

- Brace, Block, Cushion!
- Help End Shipping Hazards!
- Lower Costs!

Difficult and troublesome is this job of packaging cockpit enclosures for fighter and bomber aircraft. But Swedlow Plastic Company, Los Angeles, found the time-saving, cost-saving answer in the great new packaging medium made of . . .

Celotex Industrial Cane Fiber Board!

Today, Swedlow's B-47 cockpit canopies are shipped to prime contractors with minimum weight and labor, and in maximum safety.

Manufactured from long, tough Louisiana cane fibers, this strong Celotex board is extremely light and resilient. Because it can be fabricated to exacting product contours, it braces, position-blocks, and cushions with gentle firmness, preventing movement and impact damage. Its rigidity, strength, and cushioning make the use of lighter, less costly outer containers completely practical.

Outstanding physical characteristics of Celotex Fiber Board: Has a neutral pH value (6.5-7.5), and this low acid-alkali content is helpful in minimizing corrosion when in contact with metals. Moisture content is between 5% and 8% by weight, far less than most inner pack materials, requiring less costly desiccant. With treatment, it can be made non-dusting and anti-abrasive.

Limited packing time and space . . . your labor and damage costs . . . can be cut substantially by locally prefabricated Celotex Industrial Cane Fiber packs. For full data, mail the handy coupon today!

CELOTEX
REG. U. S. PAT. OFF.

INDUSTRIAL CANE FIBER BOARD

For packaging at its quick best . . .

MAIL COUPON NOW FOR FREE BOOKLET!

The Celotex Corporation, Industrial Dept. F-94
120 South LaSalle Street, Chicago 3, Illinois
Please send me your free booklet "Cost Saving Packaging."

Name _____ Position _____

Company _____ Address _____

City _____ Zone _____ State _____

FREE LITERATURE . . .

(Continued from page 120)

Shovel-Crane In Action:

American Hoist & Derrick Company offers a descriptive catalog on its new 1½-yard shovel, 35-ton crane. Action pictures of the American 750 in quarries and gravel plants and handling pulpwood are included, together with general specifications.

Circle 225 on Reader Service Card

"THE TAPE PRINTER"

A quick method of marking to identify contents or for general advertising uses on YOUR OWN GUM TAPE . . . Fast, Effective. Prints as you use your machine for all shipping packages. Ideal for all types of business. Now being used by a host of leading concerns everywhere. A time, money and labor saver.

There is a Tape Printer to fit any 3" standard automatic machine . . . with models available for quick change of copy for coding, identifying, dating, etc.

Distributor of the "Tape Printer":

American Tape Printer Co.
678-6th Avenue
New York 10, N.Y.

\$ 31 75
F.O.B.
N.Y.

Complete with permanent copy

See us at the 9th Industrial Packaging Show Chicago Booth No. 512

PRINT OR CODE YOUR GUMTAPE BY SIMPLY ADDING "THE TAPE PRINTER" TO YOUR PRESENT EQUIPMENT

PENNIES INVESTED SAVE THOUSANDS

Mechanically Simple
Engineered for Long Hard Use
Eliminates Need for Large Inventory
Codes and Padlocks Contents
Self Inking
Instant Drying
Prints up to 12" of copy
Quick Changeable Type

Circle No. 11 on Reader Service Card for more information

156

Electric Door Operator:

Literature from Clark Door Company Inc., describes the latest addition to the company's automatic door line: an electric operator for use with standard inclined track fire doors to widths up to approximately 8 feet. Known as the Fuse-O-Link electric fire door operator, the unit has been designed to provide automatic door operation in doorways equipped with fire doors. By means of a

fusible link disconnect device, the operator is disengaged from the door in the event of fire at a temperature setting slightly lower than that of the standard door link.

Circle 226 on Reader Service Card

Time Delay Speed Control:

The Yale Magnetic Cam-O-Tactor, a speed controlled designed to fit all makes of electric trucks, is described in detail in a new bulletin published by The Yale & Towne Manufacturing Company. The illustrated brochure shows the method of operation of the unit which, basically, is a magnetic contactor unit and a master accelerating switch—a time delay unit to space properly the closing of the magnetic speed contactors to insure smooth acceleration.

Circle 227 on Reader Service Card

Trailer Problems?

Thomas Truck & Caster Company offers literature containing information on the company's trailers which, they say, can solve practically any material handling problem. These trailers are "job-suited" to fit specific needs and to haul all kinds of loads in all types of industries.

Circle 228 on Reader Service Card

Obliterating Fluid:

Complete information on Reynolds Stencil-Kover, a tan block-out or obliterating fluid packed in an efficient, easy-to-use aerosol dispenser. The manufacturer, Reynolds Ink, Inc., points out that the fluid may be used on all types of containers: crates, cases, drums, cartons, etc.

Circle 229 on Reader Service Card

Proper Packaging For Extra Profits:

An invitation to make extra profits by using American design-engineered wirebounds, wood-created panel and nailed-wood containers is extended by The American Box Company in a pocket-size booklet. Briefly, these profits are made possible by eliminating waste of over-packaging and losses from under-packaging.

Circle 230 on Reader Service Card

Shovel Attachment:

The Schield Bantam Company has announced publication of Specification Bulletin No. TSH-301, which contains shovel specifications, capacities, information about optional shovel equipment such as electric dipper trip and rehandling buckets, plus job action photos showing typical Bantam shovel applications for the Model T-35 3/8-yard, 6-ton truck-mounted machine.

Circle 231 on Reader Service Card

Woven Wire Screens:

Simplicity Engineering Company announces publication of a new illustrated catalog which covers its complete line of woven wire screens for repair and replacement. The catalog describes the methods employed to fabricate wire screening to exact specifications and lists the sizes and types of woven wire screen now available.

Circle 232 on Reader Service Card

Job Study Symposium:

The facts behind the story of how fork trucks have become perhaps the most universally useful equipment employed in the building and construction industry are presented in a Job Study Symposium released by Towmotor Corporation. This study, No. JS-SP, points out that the trend to mass handling with fork trucks in this industry has mushroomed primarily because builders can reduce such on-the-job handling costs as truck unloading, storage and supplying materials to workmen.

Circle 233 on Reader Service Card

Award-Winning Boxes:

In an 8-page booklet, Hinde & Dauch describes its eight winners in the Fibre Box Association's annual design competition recently held in Chicago. In addition, the company pictures some of its other products in current use, and lists four standards by which packaging should be judged: easy handling and storage; built-in protection; product identification; convenient display.

Circle 234 on Reader Service Card

Central Lubrication:

Complete information on the advantages of central lubrication on fork trucks is available from Lincoln Engineering Company. One such advantage is the thorough lubrication of the truck in minimum time. The company points out that the system reduces maintenance time, since one man can do the job in less than 60 seconds. Furthermore, starving or over-lubrication of bearings is prevented.

Circle 235 on Reader Service Card

Truck's Anatomy:

In a 4-color book published by The Baker-Raulang Company, the anatomy of electric fork trucks is closely examined, with Baker's FT-40 4000-pound capacity truck as the specimen. A series of 20 pictures of the most important components of fork trucks, complete with explanatory copy, make this book a handy reference for anyone concerned with the operation and maintenance of industrial fork trucks.

Circle 236 on Reader Service Card

30
YEARS
PACKAGING
EXPERIENCE

B-G FOR SAFE HANDLING AND SHIPPING

MODEL A

Pallet Box is easily attached to any standard pallet by means of 4 corner irons and flat or round steel strap. Collapsible for storage and return shipment.

MODEL C

B-G Collapsible, hinged pallet box with drop-leaf panel for greater accessibility. All B-G pallet boxes can be furnished with top cover, if desired.

EXPENDABLE

B-G expendable pallet box, designed to withstand specified loads. Inexpensive, permitting discard after usage. Top cover, if desired.

TIGHT CORNER CRATE

The collapsible crate with the exclusive B-G Tight-Corner Hinge. Offers unusual rigidity and strength, yet light in weight. Easily assembled. Nail holes pre-drilled. Made up in 3 parts. Shipped collapsed.

PALLETS

Hardwood pallets made in all sizes and styles. Nailed with cement-coated drive screws.

For greater strength in stacking, materials handling and shipping, use Bigelow-Garvey Tight-Corner Collapsible Crates and Pallet Boxes. Designed to withstand transportation and handling hazards, B-G containers are extra strong for stacking and ideal for storage. Shipped in two or three sections. Fully assembled. Pre-drilled nail holes enable quick packing. Let us design sample container to meet your requirements.

General Office and Laboratory
326 W. HURON STREET • CHICAGO 10, ILLINOIS

Write for complete details and prices to...

Phone
WHITEHORN
4-5252

BIGELOW-GARVEY
lumber company

MILLS: ARKANSAS GEORGIA WISCONSIN MINNESOTA ILLINOIS

Wooden Boxes Six Section Panel Crates

Circle No. 25 on Reader Service Card for more information

Circle No. 117 on Reader Service Card



Safely

at less cost
with flexible

SOF-RAP

Save the surface and save plenty in damaged goods and returns. Whether it's costly printing plates or highly finished product surfaces, you can wrap best to protect with tough, durable, lightweight SOF-RAP

— Single sheet Type C for interior cushioning against shock and vibration. Strip-laminated strong kraft and cushion duplex sheet to permit "slippage"

— reduce friction damage. Thousands of uses. In rolls, sheet, tubes and bags. Get this FREE HELPFUL BOOKLET NOW!



NICHOLS
PAPER PRODUCTS COMPANY

GREEN BAY, WISCONSIN

Impact Recorder:

The Impact-O-Graph Corporation tells how you can get big returns from a small investment in literature which describes the Impact-O-Graph. This instrument records the magnitude and direction of an impact in all directions, as well as the exact time of an impact. As the manufacturer points out, its applications grow in number each day—for example, evaluating cushioning and packaging materials, laboratory testing on the incline impact tester, the drop tester and vibration equipment, checking riding qualities of trucks and trailers, quality control, etc.

Circle 237 on Reader Service Card

Circle No. 124 on Reader Service Card

**THIS MAN IS
SAVING HIS
EMPLOYER'S
TIME and
DOLLARS!**



... and YOU TOO can save valuable man-hours in YOUR SHIPPING AND RECEIVING ROOM with a

**PORTER 8T STRAP and
BOX WIRE CUTTER**

This handy tool, especially designed for receiving and shipping room use, has a pointed lower jaw which slides under the tightest binding. The thin, flat blades prevent damage to container. Keeper holds strapping and wire straight in jaws for pre-cutting. Notch in lower blade keeps wire from slipping. Spring opens jaws for faster cutting. Thumb lock keeps them closed when not in use. Made of Alloy Steel with cushion comfort grips to prevent blisters and keep hands from slipping. Cuts Steel Strapping up to $\frac{1}{4}$ " x .035 and Round Wire Binding up to .080.

Start now! Equip each man in your receiving and shipping departments with one of these cutters. Order from your distributor or send direct to us and we will have a nearby distributor fill your order. List price \$4.50...each.

H.K. PORTER, Inc.
74 Foley St., Somerville 43, Mass.

Collapsible Container:

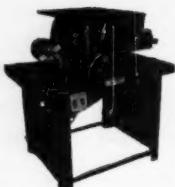
Republic Steel Corporation has made available a 4-page, two-color folder describing its Pressed Steel Division's newest product, the Collaps-a-tainer, a lightweight, collapsible, returnable, steel shipping container. Construction details are illustrated.

Circle 238 on Reader Service Card

YOU ought to pack with the AUTO-PAK

Here's Why:

You can package your products for protection, for appearance, for ease in handling with the low cost AUTO-PAK—the versatile machine that eliminates the cost and storage of prefabricated bags and the manual operations of filling and sealing.



The AUTO-PAK automatically forms two sheets of heat sealing material (cellophane, kraft, foil, etc.) around the items to be packaged, seals the four sides, cuts off and delivers a completely sealed, attractive package—as many as one every second in strips, single or double packs. It is giving economical service in 24 different industries packaging 89 different types of products.

It won't cost you anything to get more details on the AUTO-PAK. Write, wire or call today.

PAK-RAPID INC.

530 N. 21st St. Philadelphia 30, Pa. LOcust 7-4840

Representatives

New York Boston Cleveland Cincinnati St. Louis
Dallas Los Angeles San Francisco

Circle No. 122 on Reader Service Card for more information

158



SPRAY

YOUR STENCIL INK



WRITE
for full details
TODAY

Efficient easy-to-handle aerosol dispenser eliminates the muss and leaking of sticky, gummy, wasteful fountain brushes and ball pots.

Quick Spraying — Quick Drying
Waterproof Ink.

Black, Red, Green, Yellow, White,
Orange and Blue.

Modern, dependable way to stencil cartons, boxes, steel drums, crates—coding materials, inspection marking, etc.

REYNOLDS INK, INC.

4502 EUCLID AVENUE • CLEVELAND 3, OHIO

Circle No. 181 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

Look at all the features that are built right into the **PALITON**



Fast-acting hydraulic pump; full five-inch lift ensures smooth travel over rough, uneven surfaces.

Twin front wheels for high maneuverability.

Ball bearings fitted in all wheels and steering swivel.

Overloading prevented by factory-set relief valve.

Hard chrome-faced pump piston assures long life.

- Rubber or steel tires to suit customers' requirements.
- Quick and easy detachment of hydraulic unit for service or replacement.
- Controlled lowering speed.
- Pressed steel forks for high strength.
- Capacities—3,600 lb. and 4,600 lb.
- Fork lengths—36", 42", 48".
- Widths overall forks—20½", 27".

- Model illustrated, has been produced to meet universal demand for a pallet truck of high quality and modest cost. It is designed for the simplicity and strength that guarantee long life and trouble-free service.

HEAD OFFICE:

OMIC, Ltd., 9 George St., London, W.I. England

NEW YORK OFFICE:

PALITON, Inc., 40 West 29th St., New York 1, N.Y., Murray Hill 5-9323

Circle No. 120 on Reader Service Card for more information

NOTE THE VERSATILITY OF THE PALITON

Handling pallet loads of heavy parts and components.



Unloading shipments from highway and rail trucks.



Easily maneuvered for maximum space utilization.



Ease of handling with full loads preventing bottlenecks.



Circle No. 48 on Reader Service Card for more information

THE MOST TALKED ABOUT GUMMED TAPE DISPENSER ON THE MARKET!



THE MEDIUM PRICED

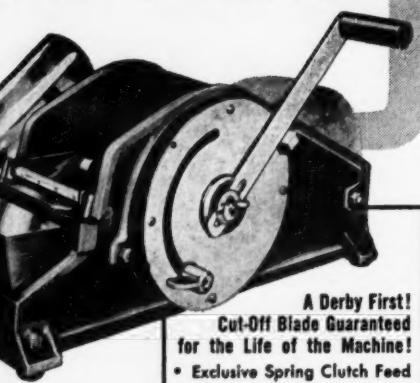
Super
DERBY "152"

PRICED FAR LOWER THAN ANY COMPARABLE MACHINE!

Derby spent 2 years designing, building and testing the fabulous Super "152." It's a rugged, efficient, gummed tape dispenser with so many big machine features, so many unusual Derby exclusives, that its low price is truly sensational!

See your dealer or write Dept. F

DERBY SEALERS INC. Derby, Conn.



A Derby First!

Cut-Off Blade Guaranteed
for the Life of the Machine!

- Exclusive Spring Clutch Feed
- Feed Stop for Predetermined Lengths up to 30"
- Dispenses 1" to 3" width
- Auxiliary Water Reservoir
- Single Brush Moisture Control System
- Adjustable Variable Length Slotted Handle
- Interlocking Side Frames
- Automatic Tape Cut-off
- Visual Measuring Scale

Strapping In Construction:

Latest issue of *Confab*, external house organ distributed by Acme Steel Company, features the story of the important role played by steel strapping in the construction of the new Trans Mountain oil pipeline in western Canada. Other stories in the issue on the subject of steel strapping point out the way in which Firth Sterling, Inc., increased its packaging capacity by 400 percent and also how Congoleum-Nairn straps export shipments of asphalt tile into unit loads to speed and simplify handling.

Circle 239 on Reader Service Card

Truck Stability:

A reprint titled "The Relationship of Fork Truck Stability To High Stacking" is offered by Mercury Manufacturing Company. The literature presents the engineering considerations in the ability of a fork truck to move loads vertically to great heights.

Circle 240 on Reader Service Card

Kushion-Kraft

is used for efficient and economical cushioning, interior and exterior packaging, surface protection, shock absorption



KUSHION-KRAFT consists of plies of processed and rugated papers in either kraft or facial tissue or a combination of both. Thickness and strength is controlled by the number of plies and the type of paper used.

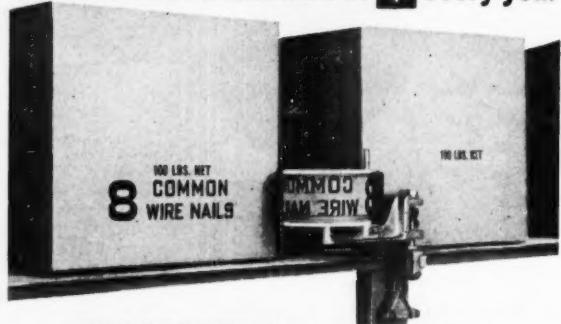
The variety of combinations of facial tissue and kraft permits every shipper to order a specific type of KUSHION-KRAFT material best suited for his product's shipping requirements.

Available in sheets and rolls

JIFFY MANUFACTURING CO.
HILLSIDE, NEW JERSEY

Circle No. 74 on Reader Service Card for more information
160

Low-cost case marker pays for itself in weeks...saves thousands of \$ every year



ROLACODER Imprinter attaches to conveyor or case-sealer

Now you can do away with that costly extra operation for manual rubber-stamping or stenciling of code-dates, lot numbers, contents descriptions, etc. on cases...or reduce big inventories of completely printed cases...and save thousands of dollars annually. Use an inexpensive ROLACODER machine to mark your cases automatically on the production line. Compact, precision-made ROLACODER is friction-operated, self-inking—makes single, accurately located imprint on each case to register with other copy. Uses quick-change rubber type or dies, holds 8-hour ink supply. Different models available to imprint top, ends, sides of small or large boxes, cartons, cases, other packages.

Write for descriptive literature

Gottsch

ADOLPH GOTTSCHO, INC.

Hillside 5, N. J.



In Canada: RICHARDSON AGENCIES LTD., Toronto & Montreal
Circle No. 66 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

New Breed of Tractors:

"Facts . . . on a New Breed of Tractors" tells, pictorially, the story of the complete line of Allis-Chalmers Manufacturing Company, this 16-page, color brochure presents an editorial message, operational methods and specific feature advantages of the four crawlers in the company's line. Also, the book includes a review of crawler tractor progress the past 100 years.

Circle 241 on Reader Service Card

Portable Elevators:

Lee Engineering Company's line of portable elevators is described and illustrated in Catalog 554. The manufacturer further points out that the units are warranted against defective materials and workmanship.

Circle 242 on Reader Service Card

Money-Saving Doors:

The money- and manpower-saving advantages of automatic doors are detailed in literature offered by National Pneumatic Company, Inc. The 8-page booklet describes the types of door operators manufactured by the company, and covers some of the more important applications.

Circle 243 on Reader Service Card

Adjustable Ramp:

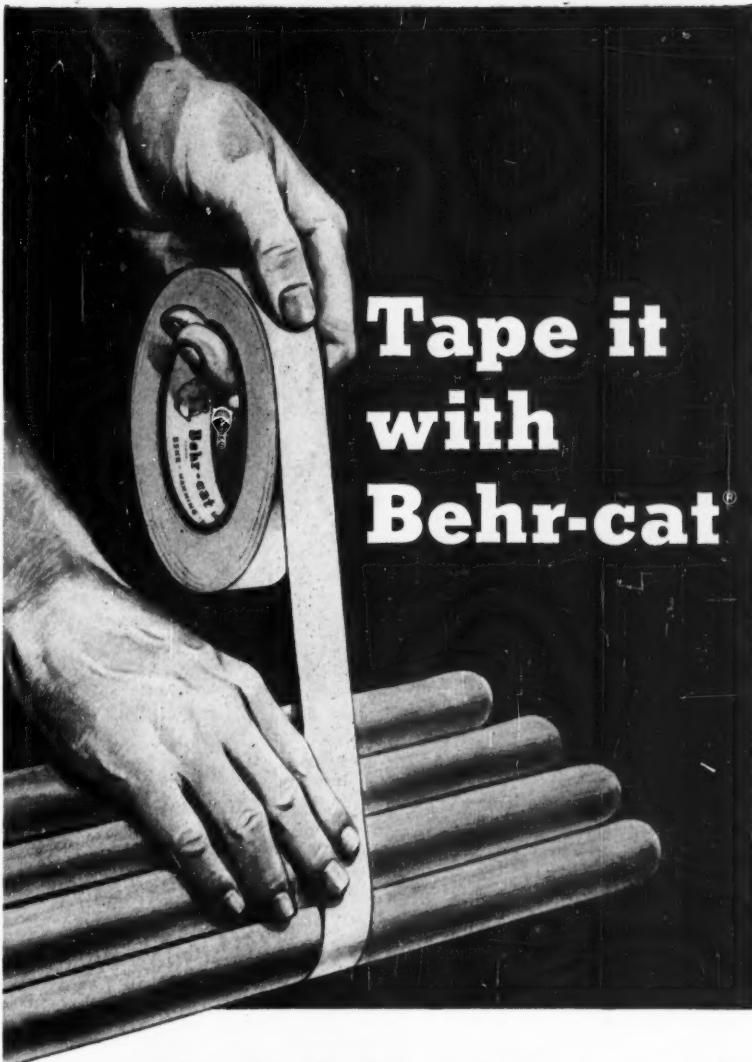
Details of a manual floating 10,000-pound-capacity hydraulic adjustable ramp are available from Rowe Methods, Inc. Known as the Commercial Adjust-A-Dock, the ramp permits a quick adjustable connection between a loading platform and a highway truck floor.

Circle 244 on Reader Service Card

LP-Gas Carburetion:

Complete information on conversion to LP-Gas is available from Marvel-Schebler Products Division, Borg-Warner Corporation, manufacturers of LP-Gas carburetion systems.

Circle 245 on Reader Service Card



Tape it with Behr-cat®

...and slash bundling costs



BEHR-CAT Strapping Tape is filament-reinforced, giving it tough holding strength. It's easy to handle and sticks at a touch. Use it to save on shipping, packing and materials handling costs.

Behr-Manning Corp., Troy, N. Y.

In Canada: Behr-Manning (Canada) Ltd., Brantford.
For Export: Norton Behr-Manning Overseas Inc.,
New Rochelle, N. Y., U. S. A.



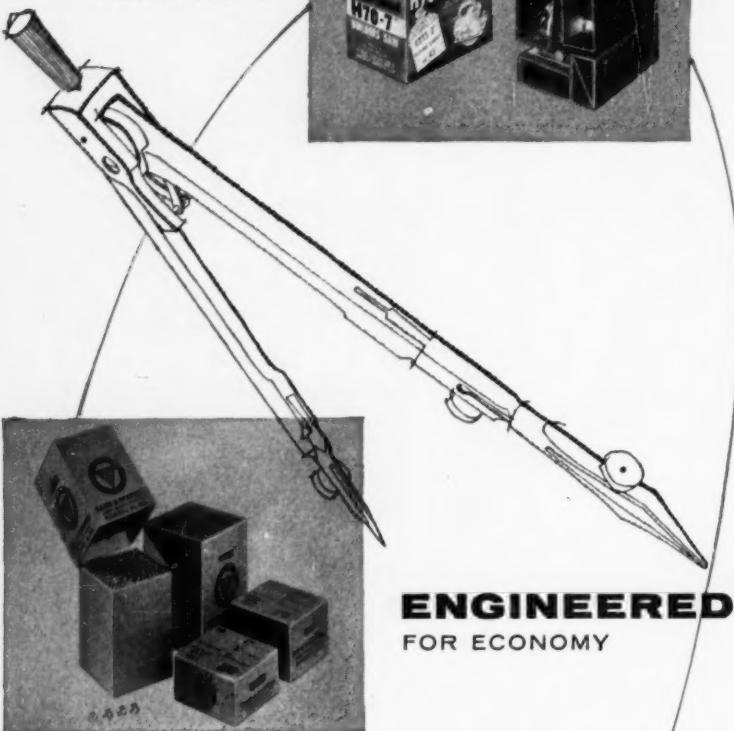
BEHR-MANNING
CORPORATION
division of NORTON Company

▲ COATED ABRASIVES
▲ SHARPENING STONES
▲ PRESSURE-SENSITIVE TAPES

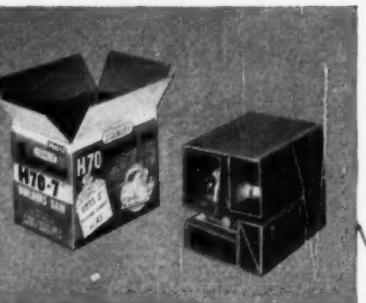
T-3

Circle No. 23 on Reader Service Card for more information

DESIGNED
FOR SAFETY



STYLED
FOR SALES IMPACT



HINDE & DAUCH

Authority on Packaging

12 FACTORIES • 40 SALES OFFICES



Write for the new booklet, *Creative Package Design*.
Hinde & Dauch, Sandusky 30, Ohio

Circle No. 73 on Reader Service Card for more information

Truck Data File:

A new data file produced by Magnesium Company of America, Tobey Aluminum Division, describes the weight, flexibility and caster advantages of the company's aluminum floor trucks. It includes specifications for the various sizes and styles of flat-bed, multiple-deck and A-frame trucks in the line, as well as information on removable sides, ends and other accessories.

Circle 246 on Reader Service Card

Efficiency in Action:

Two case histories describing how the use of electric industrial trucks has increased material handling efficiency at several companies are featured in the current issue of *Storage Battery Power*, published by The Edison Storage Battery Division of Thomas A. Edison, Inc. A third article describes how an iron works keeps its industrial truck fleet "on the go" by means of an efficiently-operated battery shop.

Circle 247 on Reader Service Card

Diversified Line:

Fibre Specialty Division, National Vulcanized Fibre Company, announces publication of Materials Handling Equipment Catalog No. 54. It describes and illustrates more than 40 types of trucks, special trucks, tote boxes, dolly trucks, all types of trays, receptacles, barrels and cans—most all made of the company's brand of hard vulcanized fibre.

Circle 248 on Reader Service Card

Liquid Drives:

Bulletin 7020A from Liquid Drive Corporation describes the Nelson "Power Mate" liquid drives. Among the advantages of these water or oil operated units claimed by the manufacturer are the ability of the drive to vary the speed of the driven equipment and, in another light, the ability of the drive to limit the torque transmitted to the driven equipment.

Circle 249 on Reader Service Card

PACKAGING AND SHIPPING NEW EQUIPMENT . . .

(Continued from page 152)

Packaging Unit for Silicone Materials

A seamless hand-folded packaging unit, providing easier and safer handling of G-E silicone rubber compounds has been designed for the General Electric Co.'s. Silicone Products Department by the Albany Corrugated Box Co. The container's sides have five thicknesses of board for stacking strength, thereby eliminating possibility of collapse under weight.



Used for shipment of compounds to G-E customers, the package does not require staples. A polyethylene liner in the box seals out moisture, dirt and other foreign substances. The package can be quickly opened by splitting two tapes. If only part of the silicone material is used, the containers can be thoroughly re-sealed.

Circle 252 on Reader Service Card for more information

Super-Long Paper Bags

Now you can get paper bags from six to 14 feet long. The Equitable Paper Bag Co., Inc. has developed a machine that makes what are claimed to be the world's largest paper bags.

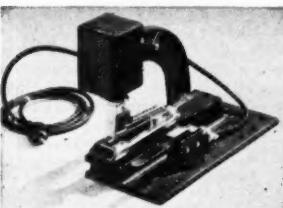


The new bags, ranging from six to 14 feet long, are being used to package rolled rugs, cloth, insulation batts, tubing and many other long, bulky products for shipping and storage. Bags are available in single or doublewall construction and are said to be packed and sealed quickly and easily. They can be printed with one or two color design.

Circle 253 on Reader Service Card for more information

Automatic Stapling Machine

A high-speed automatic stapling machine to accommodate a conventional desk-type stapler has been announced by Andrew Technical Service. The automatic machine operates the stapler as rapidly as the work can be fed. Both hands of the operator are free to manipulate the work, since it is not necessary to pound the stapler



It's Revolutionary...

New Tab-On Stencil

CUTS
SHIPPING
PAPER
COSTS



The new Weber Tab-On Stencil is prepared automatically with the typing of the invoice or bill of lading.

Speeds up
Addressing
of
Shipments



With the Weber Tab-On Stencil and hand printers you can address labels, tags or containers at a rate of 50 per minute.

Yes, here's a faster, more economical way to address containers for shipment with the amazing new Weber Tab-On stencils. Eliminates delay . . . when shipping paperwork is made out stencil is automatically prepared in same typing. Then just clip stencil to Weber hand printer and you're ready to address labels, tags or containers . . . addresses 50 per minute . . . 7500 without re-inking. Saves typing time, eliminates errors. It's low cost, too . . . less than 2c to prepare a stencil including labor and material.

Send for FREE
Detailed Information on
the Weber Tab-On-Stencil

another--

Weber

system

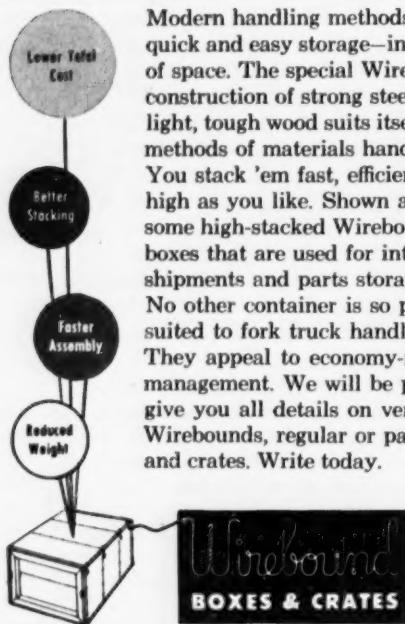
Name _____
Firm _____
Title _____
Address _____
City _____ State _____
WEBER LABEL AND MARKING SYSTEMS, Dept F-94, Mt. Prospect, Ill.
Div. of Weber Addressing Machine Co.

Circle No. 163 on Reader Service Card for more information



No matter where they're bound
SHIP THEM WIREBOUND!
 and Stack 'em High As You Like

Modern handling methods call for quick and easy storage—in a minimum of space. The special Wirebound construction of strong steel wire and light, tough wood suits itself to modern methods of materials handling. You stack 'em fast, efficiently and high as you like. Shown above are some high-stacked Wirebound pallet boxes that are used for inter-plant shipments and parts storage. No other container is so perfectly suited to fork truck handling. They appeal to economy-minded management. We will be pleased to give you all details on versatile Wirebounds, regular or pallet boxes and crates. Write today.



MAIL THIS COUPON NOW!

WIREBOUND BOX MANUFACTURERS ASSOCIATION	
Room 1171, 327 South LaSalle Street, Chicago 4, Illinois	
<input type="checkbox"/> Have a sales engineer give me the whole story <input type="checkbox"/> Send me a copy of "What to Expect from Wirebounds"	
Name _____	
Firm Name _____	
Address _____	
City, Zone and State _____	

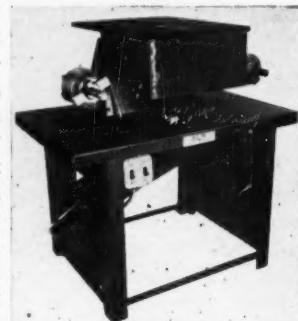
Circle No. 167 on Reader Service Card for more information
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manually. Slight pressure of the material to be stapled against the switch arm is sufficient to actuate the mechanism which may also be equipped with a foot treadle.

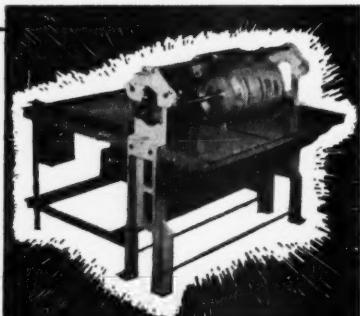
Circle 254 on Reader Service Card for more information

Low Cost, Versatile Machine

The Auto-Pak, manufactured by Pak-Rapid, Inc., is said to be a low cost, extremely versatile packaging machine. It automatically forms two sheets of heat-sealable material around products, seals the four sides, cuts off and delivers a completely sealed package. The unit, which plugs into any ordinary light circuit, makes packages from one inch square by $\frac{1}{2}$ inch thick to six inches square from practically any heat sealing web including cellophane, foil, glassine, heat sealing kraft, etc. The machine is recommended for packaging metal, cosmetics, electrical hardware, drugs, tobacco, novelties, toys, jewelry and printed products. Attachments, including belt, turret, hopper and other units are available for automatic feeding. Speed



**practical
answer to the
increasing
importance
of production
line marking!**



The INDUSTRIAL AUTO-PRINTER

Use the Industrial Auto-Printer to print your bags and containers as you need them — to speed up your production and simplify your marking problems.

Completely eliminating expensive hand stencilling, the Auto-Printer has more than met requirements for imprinting, coding, dating, addressing and other marking. Adaptable to almost any size or type of container, it prints at up to 2000 impressions per hour — legibly and accurately.

In hundreds of plants, Auto-Printers are setting appreciable records for saving marking time and labor where efficiency, accuracy and speed are demanded.

We are also prepared to design, develop, engineer and manufacture . . . to the highest standards of excellence . . . units to meet your special needs in marking and coding equipment. Full information and recommendations for your requirements will be sent on request. Write for catalog. Dept. F.

I ndustrial M arking E quipment
 COMPANY, INC.
 454 Baltic Street, Brooklyn 17, New York
 Main 4-2601

Circle No. 79 on Reader Service Card for more information
 FLOW • SEPTEMBER, 1954

is up to 40 packages per minute when products are hand fed. Size of the unit is two feet wide, three feet high and three feet long.

Circle 255 on Reader Service Card for more information

Multiple-Action Bag Packer

This multiple action Auger-matic bag packer is for packaging of powdered, granular, pellet and fibrous materials. Manufactured by E. D. Coddington Mfg. Co., the packer is said to eliminate any need for pre-weighing and to assure tightly filled valve bags, each containing exactly uniform weight. In this newly designed model, the built-in scale has been redesigned to include a shaker which jolts each bag vigorously and repeatedly during the filling process. This not only prevents

any slack-filled bags, but also permits the use of minimum size valve bags at correspondingly lower cost for bags, according to the manufacturer. Another feature of the new Auger-matic is a security clamp which holds the valve bag

CAPCO
DOCK COVERS
GIVE
YEAR 'ROUND PROTECTION

CAPCO Dock Covers completely enclose the space between car and building doorways protecting loading and unloading during bad weather preventing accidents insuring against loss of heat or refrigeration. 51 different models in any size for every loading problem.



Write for literature and name of nearest distributor.

CAPCO

622-24 PROSPECT AVENUE • KANSAS CITY 24, MISSOURI

Circle No. 35 on Reader Service Card
FLOW • SEPTEMBER, 1954

Circle No. 46 on Reader Service Card for more information

ITS FELT TIP WRITES ON EVERYTHING!



in **BOLD** or **fine** lines

Marking steel drums, tools, parts, pipes, etc. is smooth sailing with the Flo-master Felt-Tip Marker.

The complete range of ten colors in Flo-master Inks permits speedy and accurate identification for assembling, stocking, inspecting.

Flo-master semi-opaque inks — waterproof, non-smudging, fast-drying — are recommended for hard-to-mark surfaces using the KING SIZE Flo-master. For general purpose marking—cartons, cases, etc.—use Transparent Inks with POCKET SIZE Flo-master (illustrated).

Contact your supplier or write direct to Cushman & Denison Manufacturing Co., Dept. F-16, 153 23rd St., New York 11, N.Y.

Flo-master
FELT-TIP MARKER

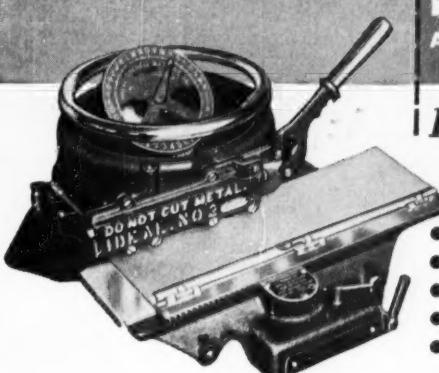


100 stencils an hour!

WITH THE

IDEAL
Automatic Stencil Machine

It shifts for itself!



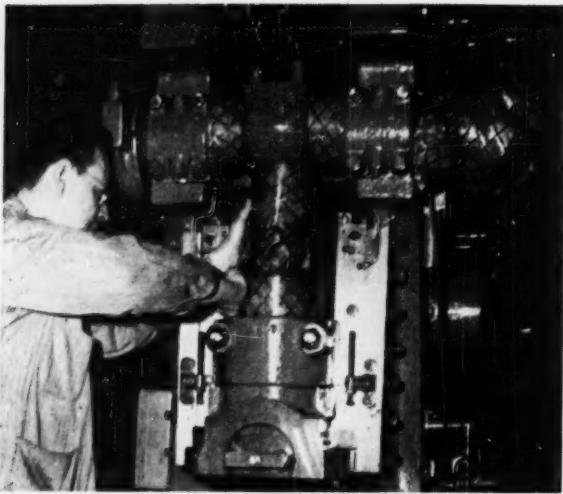
Pays for Itself Many Times Over!

- Automatic Paper Carriage
- Automatic Line Spacer
- Space-Saving Operation
- Cushioned Hand Wheel
- Cushioned Short-Stroke Handle
- Proper Reading Angle Character Dial
- Safety Hood

WRITE for free demonstration!

IDEAL
STENCIL MACHINE CO.
104 IOWA AVE., BELLEVILLE, ILL.

Circle No. 76 on Reader Service Card for more information



All-weather protection for 65-ton punch press for less than \$1...with **GREEN CORE RAP®**

One of the products of Walsh Press & Die Co., Chicago, is a series of powerful, precision built punch presses, with pressures from 6 to 65 tons and weighing from 1000 to 9000 pounds. They're shipped, uncrated, often exposed to the weather.

The frame, and many other exposed parts are painted to resist exposure ... but the polished working surfaces require special protection.

The protecting cover must be absolutely waterproof. It must hold tight against winds when shipped on flat cars; must stand up under severe heat or cold. It must be greaseproof, to retain the oil base preservative with which parts are coated.

To meet these requirements, Walsh engineers have standardized on *Green Core Rap*. This protective, economy-priced sheet has a greaseproof film laminated to a backing of creped kraft. Wax coated, it is self-sealing. So pliable it easily molds around any part.

Since changing to *Green Core Rap*, every press has reached its destination without a spot of rust ... at a cost of less than \$1 for the *Green Core Rap*.

Many companies have cut packaging costs and are providing better protection for metal parts, with *Green Core Rap*. This economical barrier material is recommended as protection for domestic shipment or storage.

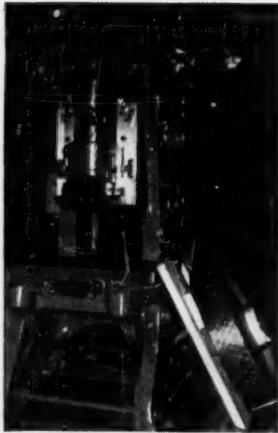
For overseas shipment, *Green Core Cloth Rap* meets Government Spec. JAN-B-121, and Amendments 1 and 2.

Write for complete information on *Green Core Barrier Raps*. We'll send samples, and test data.

LEADERS IN THEIR LINE

MID-STATES GUMMED PAPER COMPANY
2511 South Damen Avenue, Chicago 8, Illinois
New York • Boston • Philadelphia • Cleveland • Detroit • St. Louis • Atlanta • Los Angeles

Circle No. 109 on Reader Service Card for more information
166

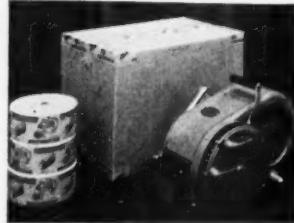


in place on the filling spout regardless of the force with which material flows from the spout. Operator releases the bag when packer shuts off by raising security clamp handle.

Circle 257 on Reader Service Card for more information

Single-Stroke Tape Dispenser

National Tayper Model 52, a manually operated industrial tape dispenser, is said to permit substantial savings in tape costs because of its patented Length-O-Graph which permits selection of tape lengths. A single pull of the lever automatically measures, moistens, cuts off and delivers tape of any desired length up to 36 inches. The dispenser handles tape in widths up to and including four inches. Manufacturer is Nashua Package Sealing Division of Nashua Corp.



Circle 258 on Reader Service Card for more information

Easy Load—Easy Unload Container

A single face corrugated "pouch-type" container, called the Chippasac has been developed by the Chippewa Paper Products Co., Inc. to help

NOW...

JET BLACK STENCILING
INSTANT-DRY AND
UNIFORM EVEN ON
"PROBLEM SURFACES"

NEW TYPES OF STENCILING INKS WIPE OUT OLD PROBLEMS!

TYPE 'P'—will not harden on felt or bristles. For card board, wood and burlap. Jet black only—\$3.95 gal.

TYPE 'Q'—for NON-POROUS & GLOSS surfaces such as metals and glass. Black \$9.95 gal., colors \$12.50 gal.

TYPE 'N'—stencils through oil slick on metal. Saves cleaning. Wipes off with Speedry solvent leaving painted surface unharmed. Oil resistant, \$17.50 gal.

"STENCIL-MAT" UNITS (shown at left) from \$5.25

SEND US YOUR STENCILING & MARKING PROBLEMS FOR SOLUTION.

SPEEDRY PRODUCTS, INC.
Richmond Hill 18, N. Y., Dept. F-9
Mfrs. of marking devices & special inks

Always inked

Circle No. 157 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

speed and simplify packaging of products needing the type of protection afforded by corrugated material. The container is said to be ideal for industrial applications where it is necessary to separate individual parts while giving them protection against shock. Unusual loading and opening techniques have been designed into the Chippasac to save shipping room time and simplify opening.

Circle 259 on Reader Service Card for more information

Spray-On Obliterating Fluid

Stencil-Kover is a rapid drying tan-colored material in a spray can, which is used to cover marking errors on new containers or to prepare old containers for re-use. The manufacturer, Reynolds Ink, Inc. reports that the obliterating fluid may be used on all types of containers; crates, boxes car-

tons, drums, etc., and that it will cover everything; stenciling, crayon marks, printing, labels, etc. Supplied in 12-ounce cans, Stencil-Kover is always ready for use. New stenciling or marking may be applied over the quick-drying fluid within ninety seconds.

Circle 260 on Reader Service Card for more information



LOT LABELLING

Eliminate Shipping Labels! Print Direct!

Quick! Accurate! Easy! Print shipping information direct on cartons, boxes, packages. Eliminate double operation of preparing labels and then pasting them to the containers. Get 1,000 or more clear, sharp impressions from one stencil without re-inking. New FORM-CUT® Stencil has facsimile of your label or shipping form die-impressed into the stencil. Then type or write in address or identification data . . . attach to duplicator . . . and print, like using a rubber stamp. Write for Literature and FREE SAMPLE FORM-CUT STENCIL AND PRINT.

THE ORIGINAL HAND STAMP
STENCIL DUPLICATOR



Also for addressing shipping tags and labels . . . prints postcards, menus, forms, bulletins. A complete outfit: \$9.50 to \$99.50, including supplies (f.o.b. factory). At office or shipping room supply dealers.

MULTISTAMP
STENCIL DUPLICATOR®
MANUFACTURED ONLY BY THE MULTISTAMP CO. INC., NEW YORK

OVER 30 YEARS
Circle No. 115 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954



CUSH-ON-STRAP is the only padded strapping for protective packing of appliances and other finished metal and wood products.

CUSH-ON-STRAP has giant strength — yet will not stain or mar the finest finishes . . . eliminates shipping damage such as broken catches, hinges, drawer tracks, etc., preventing costly replacements. CUSH-ON-STRAP is tailored for each job. While it is supplied continuous on fibre throw-away reels, the lengths are predetermined with the metal scored for ease in breaking. Standard steel tensioners and sealers may be used, for at each end of a length 6" of metal is free from padding. Saves you money . . . CUSH-ON-STRAP eliminates waste, ends fussy pre-assembly, is applied faster and with less labor. CUSH-ON-STRAP in one product, (steel padded with fluffy cellulose) is a means of strapping everything from automotive finished parts to x-ray equipment, and from household furniture to office equipment. Mail the convenient coupon for full particulars today.

USE THE COUPON to learn how we can serve you in the packing and shipping of your products.

SACKNER PRODUCTS
900 Ottawa Ave., N.W.
Grand Rapids, Michigan

How can CUSH-ON-STRAP lower our shipping and packing costs?

Our products are . . .

Please have your Packaging Engineer demonstrate the advantages of CUSH-ON-STRAP.

Firm Name . . .

Address . . .

By . . . Title . . .

Sackner Products
900 OTTAWA AVENUE N.W.
GRAND RAPIDS 2, MICHIGAN

Circle No. 141 on Reader Service Card for more information

How to Protect Your Goods

...in shipment ... in storage

Get this
FREE
24-page
Shipping
Guide

Packed full of
money saving
ideas.
Send coupon
below.

FIBREEN
Protection
IN SHIPMENT... IN STORAGE

Here are the facts on how a super-strong, waterproof paper may be your answer to safe, lower cost shipping and storage. Read how rugged Fibreen, in rolls or blankets, gives new, low-cost protection from rough handling, water, moisture, dust, grit and staining. See how it provides protection for machinery, tools, steel, aluminum, rope, textiles, furniture, abrasives, leather, rubber and many other products.

The coupon below may help you make important shipping savings for your company!
Send it in today.



AMERICAN SISALKRAFT CORPORATION

Dept. F-9, Attleboro, Mass.

Please send fact-filled Fibreen booklet on how to save shipping costs.

Name.....
Title.....
Co. Name.....
Co. Address.....
City..... Zone..... State.....

Chicago 6, Ill. • New York 17, N. Y. • San Francisco 5, Calif.
Circle No. 10 on Reader Service Card for more information
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Wrinkle-Proof Adhesive

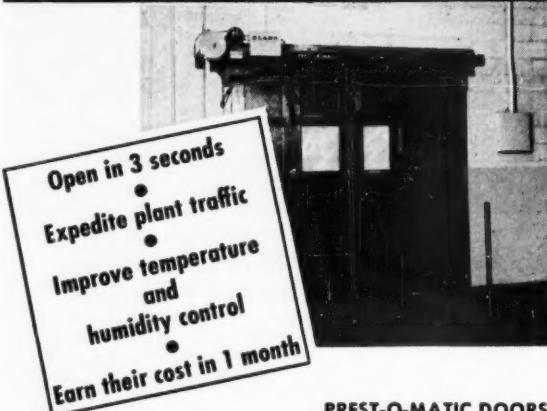
An adhesive that reportedly makes it possible for paper labels to lay flat and not lift up at the edges, even on round surfaces is now manufactured by Adhesive Products Corp. The cement is called Label-Grip. Specifically designed to adhere to metal, glass, plastics and fiber cartons, the adhesive features a rapid grab. It is non-inflammable, waterproof and stain resistant. The manufacturer states that it has passed water, oil and salt water immersion tests. It may be applied by brush or used in conventional labeling machines. Write 261 on Reader Service Card for more information

Space-Saving Case Sealer and Filler

This high-speed carton sealer and filler, introduced by the A B C Packaging Machine Corp., is claimed to require $\frac{1}{3}$ less floor space than comparable equipment. It is a continuous automatic, volumetric filler and sealer, and reportedly requires little servicing because of its simplified design and heavy duty construction. All turning shafts are mounted in ball bearings. It can turn out 200 cartons per minute.

Write 262 on Reader Service Card for more information

AUTOMATIC DOORS Packaged—Ready to Install



Open in 3 seconds
• Expedite plant traffic
• Improve temperature
and humidity control
• Earn their cost in 1 month

PREST-O-MATIC DOORS

open automatically in as little as 3 seconds. Complete safety. Fork lift truck driver pulls cord*, door opens, he drives through without slowing down, again pulls cord, door closes. Prevents drafts. Improves critical temperature and humidity control. Completely packaged—quickly and easily installed. Pays for itself quickly. Send for new booklet.

*Other type controls available.

CLARK DOOR COMPANY, Inc.

514 Hunterdon St., Newark 8, N. J.

Circle No. 60 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

Circle No. 31 on Reader Service Card

BUDA

**LIFT
TRUCKS**

Outperform,

Outlast,

Outservice them all!

GAS OR DIESEL

Write for Details!

BUDA

A Division of Allis-Chalmers Manufacturing Co.

HARVEY, ILLINOIS

**NEW—FAST—SAFE—ECONOMICAL
INLAND SEAL—LESS STRAPPING**

Inland Seal-less Strapping is the new trend that offers many advantages over the conventional strapping methods. You have only the strapping itself to work with—no seals—no time or cost of applying seals. The application of Seal-less Strapping is accomplished with a compact, easy-to-operate machine. Two simple operations tension the strapping, cuts it to exact length without waste, and mechanically interlocks the two ends of the strapping to test from 77% to 86% of the strength of the strapping itself. Seal-less Strapping has, in many cases, permitted the use of lighter and less costly packing materials as an added saving.

INLAND STRAPPING DISPENSERS

Dispensers for flat steel strapping are available in both floor and upright types for faster production. These dispensers will accommodate standard 100 lb. mill coils of strapping.

Write for literature on any or all of these cost reducing methods, without obligation.

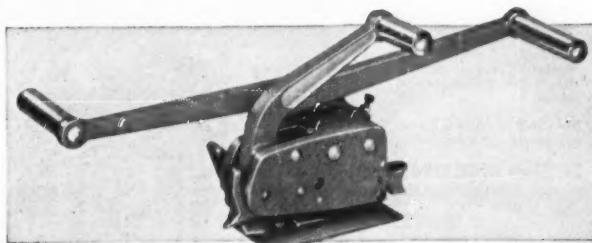
Circle No. 77 on Reader Service Card for more information

**ROUND STEEL STRAPPING
AND STRAPPING MACHINES**

Inland Models T, C, and D (manually operated) Round Steel Strapping Machines provide facilities for using Inland Round Steel Strapping from 14 to 18 gauge. Inland Round Steel Strapping has been adapted as standard by many of the largest shippers for smaller parcels, boxes and crates due to the savings in time, strapping cost, and labor.

**FULLY AUTOMATIC
ROUND STEEL
STRAPPING MACHINES**

—are exceptionally efficient on high speed production lines. These machines wind the strapping around the package, tension, twist, and cut automatically. They will accommodate packages up to 36" wide x 16" deep, or 28" wide and 19" deep.

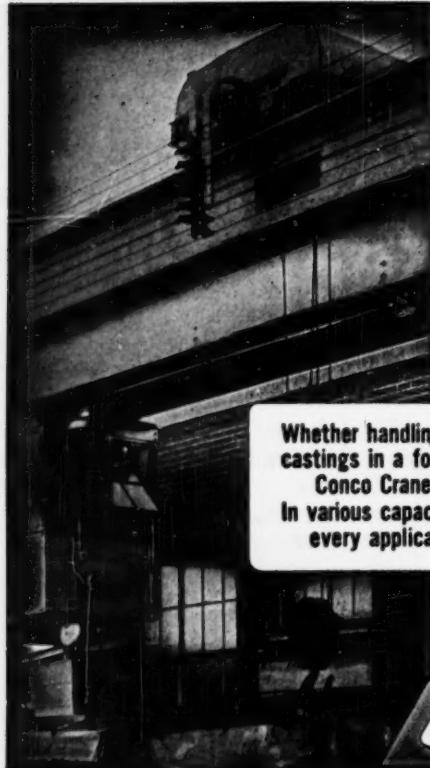


INLAND WIRE PRODUCTS CO.

3960 South Lowe Avenue

Chicago 9, Illinois

Circle No. 44 on Reader Service Card for more information



First
for
Performance

Whether handling steel in the yard,
castings in a foundry, or servicing a machine shop,
Conco Cranes rate first for performance.
In various capacities and spans, a type for
every application. Write for details.

CRANES HOISTS
CONCO

CONCO ENGINEERING WORKS

Division of H. D. Conkey & Co., 38 Grove St., Mendota, Ill.

SELECT A
Sterling
THAT FITS YOUR JOB!



(Above)
Model D3½/S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs, V-shaped front braces and brace support.

(Right)
Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

DEALERS: Want to sell quality wheelbarrows? You can on our non-exclusive basis. Write for details.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling 
WHEELBARROWS

Look for this Mark of
STERLING Quality

A 3714-56-R2

Circle No. 146 on Reader Service Card for more information

170

MEN IN THE NEWS . . .

(Continued from page 51)

. . . at Hyster Company

The promotion of Wilton G. Smith to manager of the New York export office is announced. He succeeds A. E. "Al" Betts, who is retiring after 25 years' service. Smith has been with the company eight years as retail salesman, district sales manager and as New York and Washington, D. C., representative.

Also announced is the appointment of John B. Ferguson to the position of publicity and copy chief and editor of Space magazine. He is a graduate of Lewis and Clark College, and was previously with the Oregon Journal and Sawyer Advertising Agency.

. . . at U. S. Rubber Co.

Assistant sales manager for the tires division is Walter F. Brown. He was formerly north-

FOR A BETTER BUY,
ORDER

RAZORBACK PALLET

You can't beat the quality of RAZORBACK Pallets. They are made to assure maximum service with little upkeep. RAZORBACK Pallets are available in heavy and light weight, nailed or bolted designs, and with countersunk nails. Write for details.

Arkansas Pallet Co.

P. O. Box 794-A Phone 6474
PINE BLUFF, ARKANSAS



Circle No. 13 on Reader Service Card
FLOW • SEPTEMBER, 1954

Circle No. 108 on Reader Service Card

MOVE MORE FOR LESS WITH MICRO LEVER-DOLLIES

Immediate Delivery

Made in Three
Handy Sizes

Usually Pur-
chased and
Used in Pairs

Reasonable
in Price and
Guaranteed

Finest
Materials
and Work-
manship.

Rubber Wheels
Optional

MICRON, INC.,
Dept. F
BETTENDORF, IOWA

After
First
Use You'll
Wonder
How You
Ever Got
Along With-
out Them

Write for
complete
descriptive
circular



central division manager. Brown will be succeeded by J. A. Napier. J. S. Baker has moved up to district manager at Pittsburgh, and W. L. Anderson is the new Omaha district manager.

. . . at Bucyrus-Erie Company

Martin B. Jaeger has been promoted to publicity manager. He joined the firm in 1943 and served successively as publication editor, advertising copywriter, copy chief and assistant chief and assistant publicity manager.

. . . at Bowers Battery and Spark Plug Co.

Double honors were conferred recently upon president Clarence P. Bowers. He received both a "Good Citizen Award" and "Achievement Award" from separate groups in his home town of Reading, Pa. Shortly after the awards

ONE QUICK
STROKE!

Your load's ready
to ROLL . . .

with these Two New
Weld-Bilt Time-Savers

"PAL-BOY"
NEW
SINGLE STROKE MECHANICAL
LIFT PALLET TRUCK

Amazingly easy to handle, lighter, smooth-rolling, new low-priced "Pal-Boy" is a great time-saver on single or double pallet loads up to 2500 lbs! ONE swift handle-stroke lifts your load to rolling position. New ball bearing booster rollers on each fork simplifies positioning under pallets. Has many new safety and load-saving features.



NEW
"LO-BOY"

MECHANICAL SINGLE STROKE
LIFT TRUCK

Built unusually low, designed for versatility, this easy-moving "LO-BOY" handles single-faced pallets as well as standard skids and loads, with "One-Stroke" lifting speed. Light weight, compact, strong, with Automatic Free Handle Release, Handle Safety Spring, Foot Pedal "Jar-Free" hydraulic lowering, and other features. For loads up to 2000 lbs.



Wire or write for new bulletin and low prices on
these new Weld-Bilt SINGLE STROKE time-savers.

**WEST BEND EQUIPMENT
CORPORATION**

Materials Handling Engineers

335 WATER STREET, WEST BEND, WISCONSIN
Circle No. 164 on Reader Service Card

UNITABLE

BELT CONVEYOR

For Assembly - Inspection - Packaging

The most ADAPTABLE portable conveyor you can find. Exclusive "unitized" design 10' to 80' lengths. Write for UNITABLE Bulletin now.

**CONVEYOR
SPECIALTY
COMPANY INC.**

36 Newport Avenue
North Quincy 71, Mass.

Circle No. 158 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

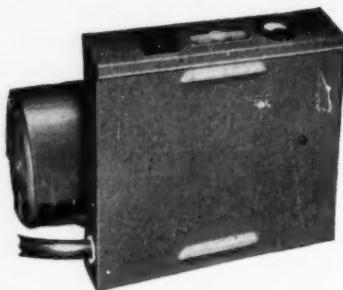
Circle No. 72 on Reader Service Card for more information

ATTENTION: ELECTRIC TRUCK USERS

CHARGE BOTH EDISON AND LEAD-ACID BATTERIES WITH ONE MULTI-PURPOSE CHARGER

THE NEW HERTNER Model UX-2

MULTI-PURPOSE CHARGER simplifies charging problems and reduces costs. It permits standardization in charger facilities. Now it is possible to replace specific-purpose chargers with fewer Multi-Purpose Chargers. This charger can be converted quickly and easily from charging Edison batteries to lead-acid batteries, and back again. Ease of conversion also applies to changing from one size of battery to another—both lead-acid and Edison types. All of the latest features of automatic control and protective devices are found in this newest Charge-O-Matic unit.



For full details and specifications write for Bulletin 210

IMMEDIATE DELIVERY

LOOK TO HERTNER FOR THE LATEST IN BATTERY CHARGERS

THE HERTNER ELECTRIC COMPANY
12690 ELMWOOD AVE. • CLEVELAND 11, OHIO

A General Precision Equipment Corporation Subsidiary
MOTORS • MOTOR-GENERATORS • GENERATOR SETS



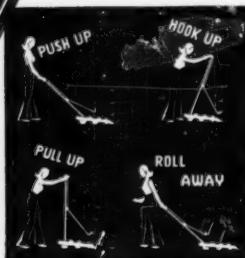
"George"

THE MATERIALS HANDYMAN



... is an almost-automatic tote box truck that pays for itself in lift and strain prevention. Small metal parts, in several boxes, are easily drawn over beveled edge of truck and held in safe position by means of mechanical leverage handle hook. Load rests on set of upper rollers while lower traction rollers make easy hauling to destination. Most plants can use a battery of "George" trucks ... for protective, low-cost, long service life. Women operate these trucks easily, without trouble or strain. Details on request.

THE TOTE BOX TRUCK



*TRADEMARK

LET "George" DO IT

Write for free Folder F
ROLOCK Inc. • Fairfield, Conn.

ZRG54A

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172

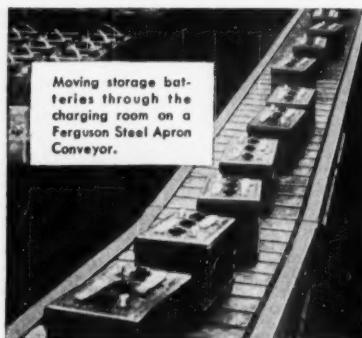
MEN IN THE NEWS

Continued

were presented, he left for a tour of Europe to study foreign developments in the manufacture of batteries and spark plugs.

... at Timken Roller Bearing Co.

Three promotions have been announced by A. M. Donze, vice president in charge of manufacturing. Herchel M. Richey, who joined the company in 1916 as a toolmaker and held a number of other positions in succession, has been named general factory manager of the Bearing and Rock Bit Divisions. Henry A. Tobey, has been promoted to factory manager of the Canton and Gambrinus bearing factories; and Wilbur L. Young has been named general superintendent of the Canton Bearing Division.



Moving storage batteries through the charging room on a Ferguson Steel Apron Conveyor.

Move It by FERGUSON to MAKE the move PROFIT!

To move your products in any direction safely, quickly and at low cost, put them on a Ferguson Conveyor. From the beginning of the line to the end of the line, your product will get the kid glove treatment at speeds you specify. Ferguson Conveyors, including belt, roller, and wheel conveyors, are built to take it, built to last, built to give you the kind of performance that results in definite economies. They're custom engineered to fit your need, solve your problem.

Write, wire or phone today for facts and figures.

HARRY J.
ferguson
COMPANY
167 West Ave., Jenkintown, Pa.
Ogentz 4401

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FLOW • SEPTEMBER, 1954

... at Ohio Corrugated Box Division

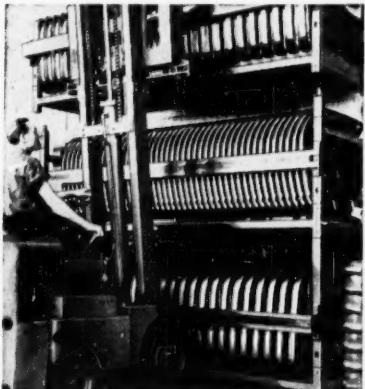
New Robert Gair Company, Inc. division manager is Frank J. Sullivan. A native of Philadelphia, he has been special sales representative for the firm's container division in New York, and has had several years' previous experience in the paperboard industry.

... at Exact Weight Scale Co.

Appointment of Donald G. Marshall to the position of electronics development engineer is announced. Much of his work will be concerned with development of special electronic scales for the plastic and plastic moulding industries.

... at Mechanical Handling Systems, Inc.

Appointment of John W. Church as personnel manager is announced. Church graduated from Princeton with an



SIMPLIFIED HANDLING SAVES MONEY!

MHS racks and work carriers handle parts and stock in storage, processing and shipping. They organize, simplify, and speed material handling, cut costs. Standard basic design is adaptable to everything from coil steel and intricate shapes to glass. They stack easily and securely. We'll work with you to give you exactly the right design for your requirements. Write



**MECHANICAL
HANDLING
SYSTEMS, INC.**

4620 Nancy Ave., Detroit 12, Mich.
Offices in Principal Cities

Circle No. 103 on Reader Service Card
FLOW • SEPTEMBER, 1954

Circle No. 100 on Reader Service Card for more information

**OWN THIS AMAZING
LOADMOBILE
FORK TRUCK**

For \$2.89* per day!

**THE MIGHTIEST
LITTLE TRUCK
EVER MADE**

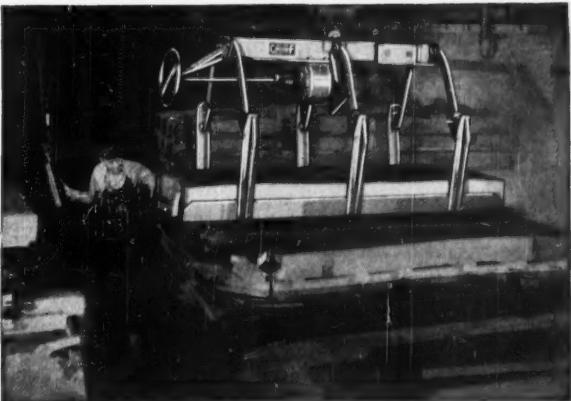
Actually smaller than your desk!

Lifts 2000 pounds (Plus 20% overload)
Weighs only 2600 pounds (with Battery)
Turns on a dime.—Gets in and out of narrowest aisles.
Tough — like all "MARFORGE" "Performance-Engineered" Equipment.
Fork Lengths up to 72"—Load Centers to 36". Also available with gas-electric drive.
LOADMOBILE FORK TRUCK
68" Telescopic Model. Free lift 48" with only 68" clearance required.
Maximum Lift 96".

*Write for details about the Sensational New MARFORGE "RENTAL-LEASE-OWN" PLAN.
57 Years in the Materials Handling Industry

Market Forge Company
EVERTETT 49 MASSACHUSETTS

One
man
and



a C-F Lifter...

One man and a C-F Lifter handle the sheet steel stock in and out of storage in this plant with ease, speed and economy. C-F Lifters can pick up, carry and unload more loads per hour using less man and crane time than any other method. Note how closely a C-F Lifter piles sheets—this results in great savings in storage space. Jaw adjustments for carrying different widths of sheets are made in a few seconds by the operator—an important feature when varying sizes of stock are used.

C-F Lifters are made in sizes to handle from 2 to 60 tons in standard and semi-special designs.

Write for the bulletin "C-F Lifters." It illustrates the many cost saving advantages of these lifters.

CULLEN-FRIESTEDT CO.
1300 S. Kilbourn Ave., Chicago 23, Ill.

HANDLE SHEETS
with

C-F LIFTERS

Circle No. 45 on Reader Service Card for more information

Circle No. 178 on Reader Service Card for more information



**NOW moves 32 drums an hour
with ONE MAN!***

*Formerly 16 Drums
an hour with
overhead crane
and 2 men....*

THE

LIFT-O-MATIC

for DRUM HANDLING

- ✓ **Simple** ... One operator can attach or remove unit, WITHOUT TOOLS, in only 2 minutes.
- ✓ **Automatic** ... Raising or lowering truck carriage provides automatic, mechanical pick-up and release. Additional operator controls unnecessary.
- ✓ **No Pallets Needed**... Move, tier or place drums quickly without pallets.
- ✓ **FITS ANY TRUCK**

* Case history
on request

Write for
Details

MARVEL INDUSTRIES, Inc.
2226 CLEVELAND ST., EVANSTON, ILLINOIS

MEN IN THE NEWS

Continued

A.B. degree in economics, and later received his M.B.S. from Harvard Graduate School of Business Administration.

. . . . at Yale & Towne Mfg. Co.

Wm. K. McGreevy has been appointed sales manager of the Los Angeles operation. He has been with the company 18 years, and served as Pittsburgh sales manager for the past five years.

. . . at Atlas Plywood Corp.

Donald C. Jordan of Park Forest, Illinois, has been appointed assistant sales manager, Western Division. A native of Newton, Mass., he has been with the firm for ten years, serving in various capacities.

NEW LONDON

Press Conveyor

LOW COST



Speeds production — easy to place for smooth movement of stampings and parts from machines — quick disposal of slugs, chips and scraps.

Neoprene cleats molded into the neoprene belt won't pull off. Also supplied with wire mesh belt.

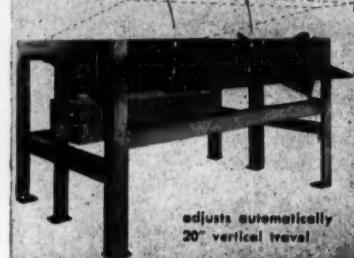
OTHER CONVEYORS for bags, boxes, bundles, bricks, blocks, and beer, sand, gravel, redi-mix, coal, salt, and chemicals.

WRITE FOR CATALOG.

NEW LONDON ENGINEERING CO.
TEL. LAF 4-2414 DEPT. F • NEW LONDON, WIS.

Circle No. 116 on Reader Service Card
174

**Christensen
FLOATING DOCKS**



adjusts automatically
20' vertical travel

SAVE TIME — LABOR — MONEY

Now it is possible to double your loading and unloading efficiency by installing the new, inexpensive Christensen Floating Dock. Its design provides for up and down counter balance movement to meet varying truck heights. The Self-Contained Unit needs no support and may be placed in front of an existing dock or in a prepared pit. The Basic Unit is recessed into old or new loading platforms and is easy and inexpensive to install.

For complete line data, write
WM. CHRISTENSEN CO., INC.
DEPT. F-54, YORK, PA.

Circle No. 38 on Reader Service Card

Neiman

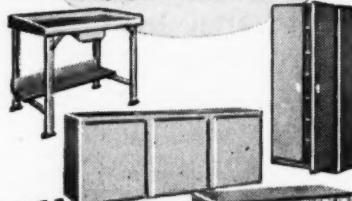
QUALITY

STEEL

SHELVING

AND

STEEL SHOP EQUIPMENT



Write for
latest catalog

Dealers' and Agents'
Inquiries Invited
DEPT. A

NEIMAN STEEL EQUIPMENT CO., Inc.
BAFCOUR AND VENANGO STS. PHILA. 34, PA.

Circle No. 187 on Reader Service Card
FLOW • SEPTEMBER, 1954

Circle No. 133 on Reader Service Card



REVOLVATOR RED-GIANT features Safety-Ease

Durability—built in by 50 years of Revolvator Co. experience—is still the fundamental of the Red Giant lift-truck line. Maneuverability, plus the safety of their exclusive double stroke mechanism, make the models shown leaders in their fields. There is a Red Giant lifttruck available for every use—for every capacity.

Write for the full facts today.



REVOLVATOR CO.

8739 Tonnele Ave., North Bergen, N. J.

NOLAN ONE-MAN CAR DOOR OPENER



Opens Doors in 20 seconds
or less!



The Nolan Car Door Opener gives one man a tremendous amount of pulling energy, to get the most stubborn, hard-rolling door wide open in a hurry! New chain has 2000 lbs. tensile strength. Safety gear is provided. No mangled limbs or loss of life. A few quick pulls on anchor chain gets any door open in a jiffy. The NOLAN saves its low initial cost in first hour of operation. New safety and efficiency features now make the Nolan 1-Man Car Door Opener a more necessary labor-saving money-saving help than ever before.

Many thousands in
constant daily use!

Free literature. Order
one or more NOLAN Mo-
del-H Car Door Openers
now. Catalog on request.
The NOLAN CO.,
110 Pennsylvania St.
Beverston, Ohio
F.O.B. Beverston

\$37.50

Circle No. 118 on Reader Service Card
FLOW • SEPTEMBER, 1954

Circle No. 134 on Reader Service Card for more information

VERSATILE BULK FEEDING... from a trickle to a torrent with VE. FEEDER

A mechanical vibrating feeder especially designed for all materials such as sugar, bran, pellets, feeds, chemicals, and grains at lower cost, higher efficiency.

Here's Why!

Higher Output—300 to 50,000 lb./hr. hard granular materials; 300 to 30,000 lb./hr. soft ground materials.

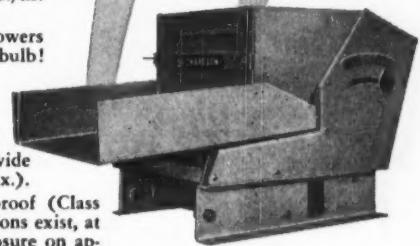
Lower Power Needs—1/8 hp. motor powers unit—inexpensive as a 100-watt light bulb!

Smaller Space Needs—35 inches long, 17½ inches wide, 19 inches high. Standard vibrating tray 16 inches wide—stainless steel when required.

Easier Control—simple adjustment over wide operating range (near 0 to 50 fpm. max.).

Safer Operation—motor is explosion-proof (Class 2, Group G), where hazardous conditions exist, at slight extra cost. Complete dust enclosure on application.

Less Vibration—working frequency is 1850 vibrations per minute; little or no vibration is transmitted to mounting installation (mounts with only 4 bolts!).



If you're interested in better bulk feeding at lower operating cost, write for Bulletin 5302 with complete specifications and drawing.

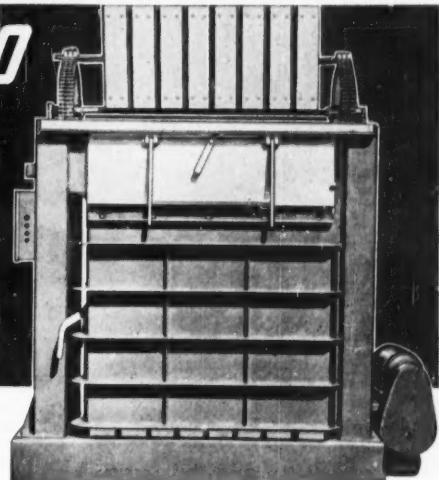
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Richardson SCALE COMPANY, Clifton, New Jersey

Atlanta • Boston • Buffalo • Chicago • Detroit • Houston • Memphis • Minneapolis
New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal
Toronto • Havana • Mexico City • San Juan

MATERIALS HANDLING BY WEIGHT SINCE 1902

AMBACO DOUBLE DOOR DOWN STROKE BALERS



Turn excess waste into extra profits with the baler that's quality engineered to operate at top efficiency with minimum maintenance.

Every cost conscious concern can profit by the installation of an AMBACO Baler—with the first and only automatic cycle. Not only does AMBACO increase plant safety, sanitation and efficiency, but it promotes "good housekeeping" and minimizes fire hazards. All of AMBACO's outstanding modern features are found in the above illustrated "DD" Series, which was specially designed for intermittent operation by hourly personnel, using any amount of scrap material.

No matter what your plant size or product, there's an AMBACO Baler designed to meet your specific requirements and increase your production efficiency. Write now for an engineering analysis and complete information.

The AMERICAN BALER CO.

549 CENTER ST.
BELLEVUE, OHIO

Circle No. 18 on Reader Service Card for more information

SALES FIELD . . .

(Continued from page 32)

Formation of the DJD Sales Corporation of Pasadena, an independent distributor of packaging industry materials and supplies, has been announced by the company's president, W. D. "Bill" Long. The newly-organized distributing firm has facilities for stock-

ing packaging materials in the Los Angeles area.

The Cambridge Wire Cloth Company has announced the appointment of the following distributors for its line of Gripper Slings: Winn Supply Company, San Diego, California; E. F. Lyden, Youngstown, Ohio; W. J. Foss Company, Springfield, Mass.; and B. C. Conveying Machinery Ltd., Vancouver, B. C.

Appointment of two district managers in the Philadelphia office of Harnischfeger Corporation is announced by general sales manager, B. Pratte. W. R. O'Malley is manager, Overhead Cranes and Hoists, and John J. Moran is manager of P&H Excavators.

Air Mac, Inc., Washington-Oregon area distributor of material handling equipment is now handling the complete line of equipment manufactured by Towmotor Corporation. Stanley B. McDonald is founder and president of the firm, which has sales and service outlets in Washington, Oregon, northern Idaho, Montana, northern California and Alaska.

SAVE MONEY ON YOUR LOADING DOCK! POWER-CURVE LOADER CUTS COSTS

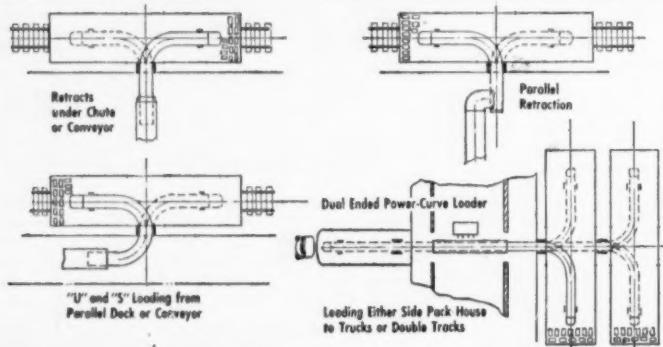


This Power-Curve Loader curves in any direction while under power. Swing it left or right, up or down. Conveys bags around corners, into boxcars or trucks.

Eliminates hand trucking; reduces loading crews to 1 or 2 men, for 12 to 30 bags per minute.

- Self-propelled
- Self-retracting
- Reversible

MADE ANY LENGTH OR HEIGHT: FITS ANY LOADING SITUATION



WRITE FOR BULLETIN NO. 50

We offer no-obligation engineering service for your specific bag handling problem...Car Loaders, Conveyors, Bag Flatteners, Elevators.

POWER-CURVE CONVEYOR CO.

2185 SOUTH JASON STREET

DENVER 19, COLORADO

Circle No. 126 on Reader Service Card for more information

Keystone Industrial Products Company of Pittsburgh has been appointed sales representatives for The Chas. Wm. Doeple Mfg. Co., Inc. in western Pennsylvania and northern West Virginia. The firm is headed by Robert H. Schleuning.

On August 16 and 17, Material Handling Equipment Corporation of Cleveland, Ohio, authorized Clark Equipment Company dealer, held a service school for the training of customers' mechanics.

The 17 year old Highway Machinery & Supply Company, Inc., Richmond, Va., has been appointed to sell and service the line of equipment manufactured by the Industrial Truck Division of Clark Equipment

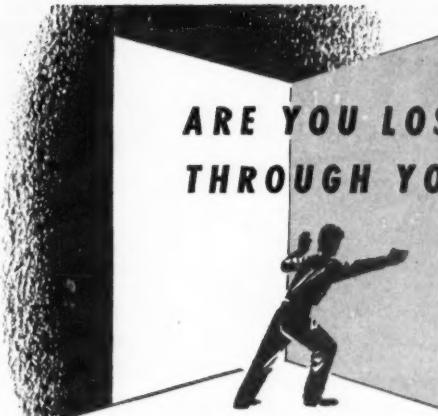
Company. Twenty factory-trained mechanics, a fleet of nine service trucks, and complete parts and service facilities are offered by the distributing firm. A branch office is located at 425 W. Fourth Street, Calem, Va., and a second branch office is nearing completion in Norfolk.

White Sales Corporation of Scotts, Michigan, which traces its founding back to 1879, has been appointed a distributor for **Chain Belt Company**. Edson White, grandson of the founder, is president of the firm.

Richard H. Knowles, formerly associated with Gould Battery Company, has joined the **Conlon-Lightbody Company**, St. Louis distributor in Missouri and Illinois for **The Elwell-Parker Electric Company**.

Central and Western Indiana representatives for **Lift Trucks Incorporated** is **Reynolds Engineering Corporation** of Indianapolis. Reynolds will handle the complete sales and servicing of the manufacturers products.

District sales managers of the **Wright Hoist Division, American Chain & Cable Company**, recently attended a three-day sales meeting at division headquarters in York, Pa. Among the topics discussed was the division's progress in modernizing its production facilities and the relationship of this program to new and improved designs of electric hoists, and overhead traveling cranes. Speakers included **C. N. Johns**, president, American Chain & Cable Co.; **S. J. Woodworth**, sales manager, Wright Hoist Division; **Henry Ervin**, vice president and director of sales, American Chain & Cable Co.; and **Marvin Silberge**, chief engineer, Wright Hoist Division.



ARE YOU LOSING PROFITS THROUGH YOUR DOORS?

**YOU ARE IF
MANPOWER
OPENS THEM**

Figure the costly materials' handling time wasted daily in your plant through busy manually-operated doors: To get through such a door, a worker must stop and leave his truck . . . open the door . . . return to the materials . . . then pass through the door. Finally, to save conditioned air, he must return to close the door before going on.

Add heat waste, door and equipment damage and decreased worker morale to those unproductive man-hours. They total up to a staggering profit loss!

STANLEY

Magic Door CONTROLS SPEED UP TRAFFIC and LOWER COSTS



MAGIC EYE
(Photo-electric). Actuates door when beam is broken.



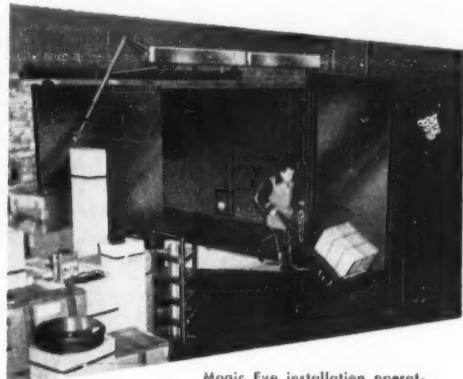
PUSH PLATES
Wall-mounted push or kick plates. Adaptable to many industrial locations.



PULL CORD
Door is operated only with pull of overhead hand cord.



MAGIC CARPET
For pedestrian traffic only. Ideal for office use.



Magic Eye installation operating combination of a swinging and a sliding door at White Motor Co. Plant, Cleveland, Ohio.

Here, you can see how **WHITE MOTOR CO.**, Cleveland, Ohio, licked the problem in one of their departments of simultaneously opening a combination swinging and sliding door, easily and economically. By automatically opening and closing office, plant, or warehouse doors with Stanley Magic Door Controls, you too can save time, labor, and money.

One of the controls illustrated could be custom-engineered to ANY door or combination of doors that swing, slide or fold, in your plant. Made for years of dependable service . . . designed for minimum maintenance . . . Stanley Magic Door Controls are the practical answer to your materials' handling problems.

Send the coupon for the name of the Stanley Field Technician nearest you. He will be glad to show you how automatic Stanley Magic Door Controls will increase your productive man-hours . . . boost profits!



MAGIC DOOR DIVISION, The Stanley Works
3019 Lake Street, New Britain, Conn.

- Please send full information on Stanley Magic Door Controls.
 Have Field Technician call.

Company Name _____

My Name _____ Title _____

Company Address _____

City _____ Zone _____ State _____

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS • STANLEY STEEL STRAPPING • STANLEY STEEL

Circle No. 145 on Reader Service Card for more information

Circle No. 172 on Reader Service Card for more information

FAMOUS
"CHEM-BOARD"

CONVOY TOTE BOXES



*Chemically Hardened
Corrugated Board

SOLD THROUGH LOCAL INDUSTRIAL DISTRIBUTORS

Cost—weigh—50% to 60% less than steel. A wide range of sizes in standard and custom made NESTING, STACKING, VERTICAL TOTE BOXES. Write for complete information, prices, name of distributor in your area.



CONVOY RECORD STORAGE FILES

Sold Only by YOUR LOCAL STATIONER

Used by most famous names in industry and businesses of all kinds. CONVOY "CHEM-BOARD" files for record storage made in letter, legal, and 12 other sizes. Stack to ceiling, mate together. Call your local stationer or write for name of stationer nearest to serve you.

CONVOY, INC.
Canton 6, Ohio
P. O. Station B, 216-F

Circle No. 91 on Reader Service Card for more information

MORE
RUGGED

NEW
LUG-ALL
WINCH HOIST

The trusty, husky LUG-ALL Winch Hoist is now more rugged than ever. Newly designed, job-tested models enable the LUG-ALL to meet new, even more challenging requirements.

1½ TON CAPACITY

The feather weight LUG-ALL lifts, lowers, pulls, bends, stretches or tightens up to 1½ tons! LUG-ALL works easily around corners. It is truly the "vest pocket" hoist of 1,001 uses, such as:

- ★ TIGHTENING CONVEYOR BELTS
- ★ HOISTING MOTORS, SHAFTS, GEARS
- ★ LIFTING VALVES INTO POSITION
- ★ PULLING CABLE THRU CONDUIT
- ★ CONNECTING SLIP-JOINT PIPE

WEIGHS ONLY 9 LBS.

Not a "warmed-over" design, but THE really new portable winch hoist for all industries. Newly designed aluminum frame protects ratchet teeth from rough surfaces. Has 133 strand, pre-formed, galvanized aircraft cable. Oiled-for-life bearings, too. Stainless steel springs. LUG-ALL Safety Handle prevents overload. Your LUG-ALL is factory tested before shipment . . . guaranteed for one year. Order today, or write for detailed literature.

Also available in rust-resistant, corrosion-resistant MARINE type models with stainless steel cable at slight additional cost—all parts salt spray tested.

MODEL #3000 HD

\$35.25
FOB

THE LUG-ALL COMPANY

WYNNEWOOD 19, PENNA.

COURSES IN MATERIALS HANDLING

AT THE SCHOOL OF MATERIALS HANDLING
IN THE BEAUTIFUL COUNTRYSIDE OF KENT, ENGLAND
FOR ALL LEVELS OF MANAGEMENT AND FOR PRIVATE STUDENTS

Come and spend a few weeks with us and study, both in theory and practice, this important subject. The fees are fully inclusive covering full tuition, first-class accommodation and cuisine, club membership and extensive recreational facilities.

12 Week Residential Course—
Work Study and Materials Handling \$1200
6 Week Residential Course—
Materials Handling \$ 650
6 Week Residential Course—
Work Study and Materials Handling \$ 650
3 Week Residential Course—
Materials Handling \$ 350
2 Week Residential Course—
Materials Handling \$ 250

WRITE FOR FULLY ILLUSTRATED BROCHURES WITHOUT
DELAY TO: THE REGISTRAR, SCHOOL OF MATERIALS HANDLING,
DIVISION OF THE COLLEGE OF PRODUCTION TECHNOLOGY,
SWINFORD OLD MANOR, NR. ASHFORD, KENT, ENGLAND

Circle No. 47 on Reader Service Card for more information

Highlights

of the month's news

THREE'S no doubt about it—management in all industries is becoming increasingly aware that, of all operations from raw material to point of delivery, product price is most affected in packaging and material handling operations. And, as management concentrates more on operational savings achieved through elimination of shipping losses and conservation of time, space and manpower, the Society of Industrial Packaging and Materials Handling Engineers continues to broaden the educational scope of its technical program.

This fact is emphasized by Walter J. Byrd, chairman of the 1954 Annual Educational Short Course to be conducted in Chicago September 27-30 in conjunction with the Ninth SIPMHE Exposition and the National Packaging and Materials Handling Competition. He points out that, as a result of a survey to the national membership and to those who attended previous short courses, the program will be expanded to at least 18 technical sessions.

Co-sponsored by the University of Illinois, the course will again feature a "Fundamentals of Packaging" series, with an additional series on "Fundamentals of Material Handling", and an advanced section with special emphasis on "Material Handling Costs", "Packaging Machinery", "Consumer Packaging" and "Work Simplification", to name a few.

Management's keen interest in packaging and material handling costs is further evidenced by the response to this year's Competition, also sponsored by SIPMHE concurrently with the Exposition at Chicago's Coliseum. Judging by the number of requests for copies of regulations governing the competition, the number of entries should reach an all-time high for the coming event.

* * *

While on the subject of shows, the recent Western Plant Maintenance Show in Los Angeles was highlighted by a series of excellent talks. Although maintenance as applied to production was stressed, of course, there appeared to be an increasing awareness of the growing relationship between maintenance and automatic material handling.

One of the predictions voiced was that, before too long, some metal-working plants would be one huge production machine—with raw steel rolling in at one end and finished products rolling out the other. And, in between, a half-dozen production operators and a hundred maintenance men.

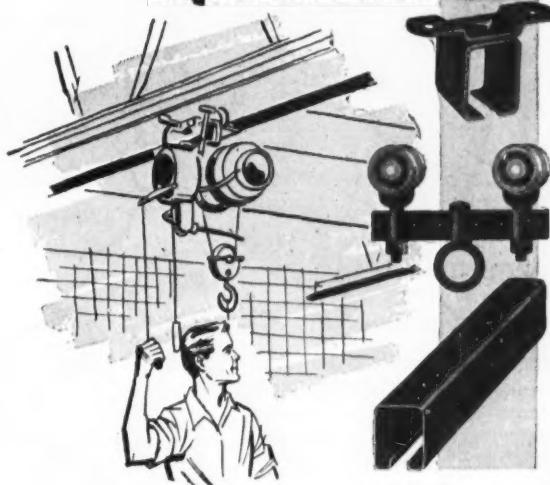
Could this happen to material handling also? Will the day eventually arrive when we'll have comparatively few material handlers and a great number of handling equipment maintenance men? It's something to think about.

NO "Big Deal"

when you install



OVERHEAD CONVEYING EQUIPMENT



Your own men can do it . . . and save you money. Here are the simple ABC's of Coburn's easy and inexpensive installation.

- A. Our engineers make a study of your particular plant layout.**
- B. Easy-to-follow plans then are submitted.**
- C. These plans, plus Coburn's simplicity of parts and design enable your own plant personnel to set up your overhead conveying system quickly and economically.**

Re-arrangement or extension of your system can be made at any time because of the sectional design of Coburn Overhead Monorail. Coburn Conveying Equipment pays for itself many times over in greater labor efficiency, reduced product damage, and faster handling of materials. Write for Catalog #220 to Coburn Sales and Engineering, 56 Sterling Street, Clinton, Mass.

2578

COBURN PRODUCTS

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION





CESCO'S TOTE-SHOP BOXES

**DO YOUR ROUGH/TOUGH JOB
EFFICIENTLY • EASILY • ECONOMICALLY**
on Conveyors • Pallets • Hand Trucks
Skid Platforms • or what have you

RUGGED CONSTRUCTION • PRIME MATERIALS



Model #WB (Wood Bottom)

Stock sizes will accommodate loads up to 200 lbs., possibly greater, depending upon material packed and handling method.

MODEL WB

STANDARD SIZES AVAILABLE FROM STOCK
(Prices net - F.O.B. Northampton, Mass.)

Lots of	WB-1	WB-2	WB-3
2000	\$1.96	\$2.14	\$2.28
1000	1.99	2.17	2.31
500	2.02	2.20	2.34
250	2.07	2.25	2.39
100	2.12	2.30	2.44

Model	Size	Length	Width	Depth	Weight
WB-1	I. D.	14½"	11½"	9"	11½ lbs.
WB-2	I. D.	18"	11½"	9"	13 lbs.
WB-3	I. D.	20"	11½"	9"	14 lbs.

SPECIAL APPLICATION MB - (Metal Bottom) FLAT



Standard Sizes
in Stock - Write
for Information.

CESCO

CONTAINER CO.

General Offices: 475 Fifth Ave., New York 17, N.Y.
Factory NORTHAMPTON MASS.

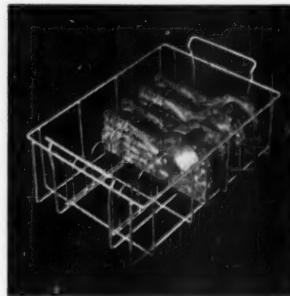
Circle No. 37 on Reader Service Card for more information
180

NEW EQUIPMENT . . .

(Continued from page 40)

Protective Baskets

Mid-West Wire Products Co., Inc. announces the availability of Carriers specially designed to protect die cast parts through all phases of processing, including cleaning. The Carriers are wire baskets which suspend each part so as to protect critical surfaces from damage. They become an integral part of the conveyor system, eliminating non-productive transfer labor in and out of cleaning. The baskets may be stacked ceiling high.



Write 263 on Reader Service Card for more information

Dragline Truck

Lewis-Shepard Products Inc. introduced a new four-wheel dragline truck recently. Two styles of the truck are available—one for in-the-floor dragline conveyors and one for overhead dragline conveyors. An adjustable drop pin makes the engagement and release from the dragline extremely easy, it is said. The truck's deck is constructed of tongue and grooved, kiln-dried hardwood and is protected on all four sides by structural steel. All wheels are rubber tired with metal hubs and sealed bearings.



Write 264 on Reader Service Card for more information

Hopper or Flatbed Truck

Model R-15 is the latest addition to the Moto-Bug line manufactured by Kwik-Mix Company. The machine features a 50 percent increase in hopper capacity, four wheel balance, and a seat for the operator. It is available as a hopper or flatbed platform truck. Hopper capacity is 2000 pounds with 15 cubic feet of space available for

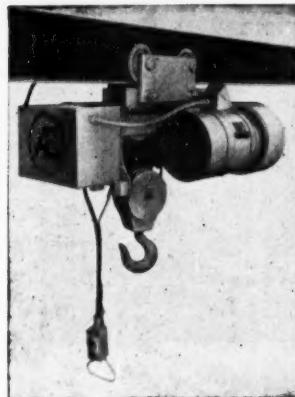


the load. As a flatbed platform truck, it has a load area of 34 x 54 inches. The platform is equipped with stake pockets and a latch for quick dumping. Power is provided by an air-cooled gasoline engine, with speed up to 6 mph. forward or reverse.

Write 265 on Reader Service Card for more information

Light, Modern Hoist

Said to be the most modern hoist available is the new Lo-Hed Electric Hoist with welded steel chassis manufactured by American Engineering Company. The unit has retained the balanced design basic in all Lo-Heds with drum on one side and motor on the other, while incorporating the latest developments in engineering and materials. Featured, in addition to the lightweight welded steel chassis, are the straight line, 3-reduction spur gears; automatic heavy duty type lowering brake; heavy duty hoist and crane type motor; single speed pushbutton control, 110-volt at the push-button;

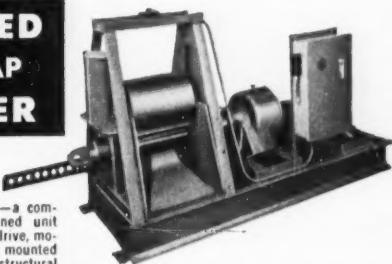


Circle No. 3 on Reader Service Card for more information

MAKES BALES

of strip shearings — stringy scrap

**ALLIED
SCRAP
BALER**



The Allied Baler—a complete, self-contained unit including geared drive, motor and controller mounted on a portable, structural steel base.



Lead-in piece is hooked to winding spindle. Tangled mass is dragged in. Bale partly formed. Compacting roller and contour of baling box form dense uniform bales.

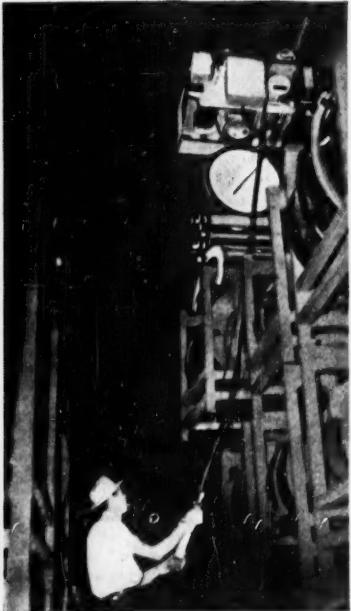
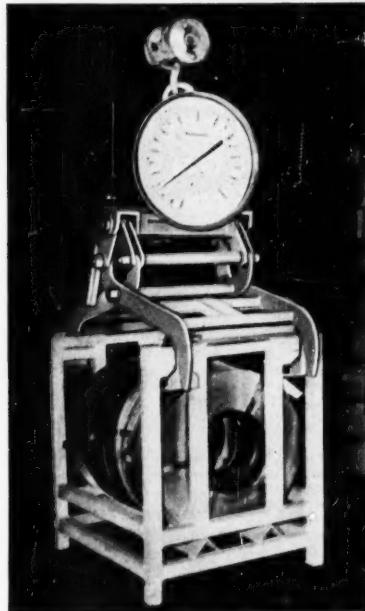
Write for further information.

Allied Steel and Conveyors, Inc.

17309 Healy Ave. • Detroit 12, Mich.

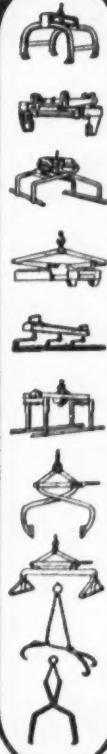
MANSAYER GRABS

FOR RACKS & CONTAINERS



Though the Mansaver shown here is a fully automatic rack grab for handling coils, Mansaver rack-handling grabs are also motor-driven and manually operated, each engineered for a particular application.

The automatic grabs can be used for one size of rack or tote pan only, without much loss of space. The manual and motor-driven styles handle racks and pans of various sizes, and are made with hand or motor-operated turntables, to save space. Motor-driven Mansaver Grabs can be controlled by the crane operator more easily than can the automatic types. Mansavers have been built up to 100,000-lb. capacity. Name your need. We'll meet it.



★ MANSAYER INDUSTRIES, INC. • 3103 EAST ST., NEW HAVEN, CONN. ★

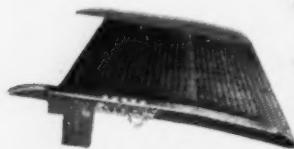
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FLOW • SEPTEMBER, 1954

Circle No. 94 on Reader Service Card for more information

STRENGTH

without weight . . .



built into every

MAGFAB MAGNESIUM DOCKBOARD

Get all the advantages of high-capacity steel—at one-fourth the weight of steel—with MAGFAB dockboards. They eliminate delays . . . take on the toughest job safely, with effortless ease . . . reduce to minimum all problems of positioning, moving and storing.

Full facilities for designing low-cost, extra-strength boards.

Magnesium FABRICATORS, Inc.

ENGINEERING • DESIGNING
FABRICATING



Check THESE EXCLUSIVE FEATURES

Non-slip surfaces—made to famous "Inland" 4-way safety design—in both adjustable and flush types. Positive, spring-loaded locking of adjustable support. Exclusive full-length contour curb with full length hand rail. Special designs engineered in capacities to 18,000 lb. All personnel well experienced in magnesium fabrication.

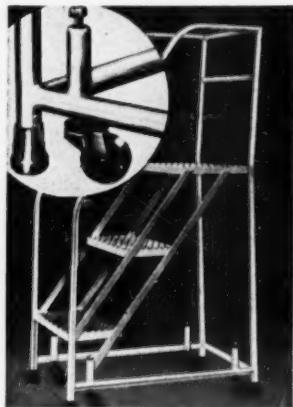


completely shrouded, all-steel safety type bottom block, ball-bearing sheaves, hook carried on anti-friction thrust bearing. The BB model is manufactured in two and three ton capacities.

Write 266 on Reader Service Card for more information

Increased Stability

The Ballymore Company says the inherent stability of its safety-step ladders is substantially increased by the use of a newly-designed rubber foot on all legs which increases the floor contact area by 400 percent. The all-welded safety ladders with the new rubber foot are available in 115 standard types, up to twelve steps, with a choice of three safety treads—expanded steel



lath, steel gripstrut, or rubber-clad steel plate. The caster shown carries the weight of the ladder for easy movability; retracts automatically when the ladder is used.

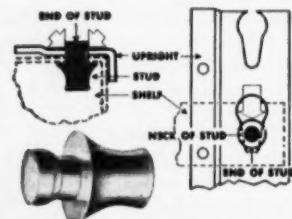
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SHELVING EXCLUSIVE* gives Equipto Units 3 big advantages

1 60% FASTER ASSEMBLY. No fumbling with nuts, bolts, and tools. Fewer parts.

2 QUICKER SHELF ADJUSTMENT. Can be instantly shifted without moving adjacent units . . . adjusts on 1 1/2" centers.

3 GREATER SHELF CAPACITY. Each shelf will carry 600 lbs. without permanent deflection . . . 2000 lbs. when reinforced.



Send for complete 32 page free catalog.

Equipto

Division of Avera Equipment Co.
805 Prairie Ave., Avera, Illinois
Steel Shelving...Parts Bins...Power Units

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182

FLOOR TO FLOOR TRANSFER MADE EASY WITH THE

Unitized
SLIDE BED*
INCLINE CONVEYOR

SPEEDS UP PRODUCTION

SAVES TIME!

SAVES MONEY!

Conveys smoothly* up or down a 28° angle. Has ball bearing adjustable bump rollers and snub assembly. All bearings are grease sealed. Fully adjustable at all outside points to permit easy belt alignment. Powered by the economical Pakage Power Unit.

MAIL THIS COUPON TODAY FOR DETAILS

FREE!

ISLAND EQUIPMENT CORP.
27-01 Bridge Plaza North
Long Island City 1, N.Y.
Please send me full details on the Unitized
Slide Bed INCLINE CONVEYOR.

COMPANY _____
NAME _____
ADDRESS _____
CITY _____ STATE _____

Circle No. 82 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

Hydraulic Stacker

Liftequip Company has announced its line of Easo-Lift hydraulic stackers, which are battery powered with built-in automatic chargers. Lifting height ranges from 54 to 120 inches. Standard width is 31½ inches; length is 50 inches; and forks are 30 inches long. Overall height is 14 inches above the required lift. Electric-hydraulic power operates on a 12 volt heavy duty battery, and gives a lifting speed, fully loaded, of 15 feet per minute. Model shown has 1500 pounds capacity, weighs 450 pounds.

Write 268 on Reader Service Card for more information

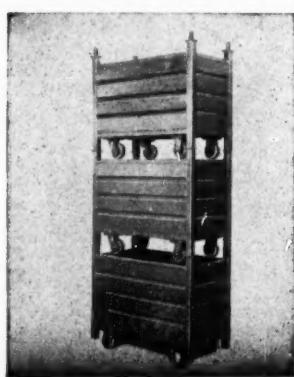
Portable Curve Support

Speedways Conveyors, Inc. has designed the Curve Speedtrux portable conveyor support for use with its gravity wheel and roller conveyor curve sections. Of all-welded construction, the support has adjustable vertical arms of 1¼ inch pipe that can be raised to any height desired, in the three models available, or lowered to a minimum of 16 inches. Horizontal arms are adjustable for length of curve, and special hinging arrangement on outboard support provides flexibility for use with any width conveyor or any radius curve.

Write 269 on Reader Service Card for more information

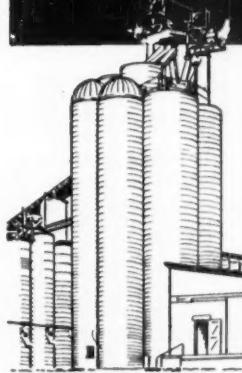
Stacking Box Trucks

Rack Engineering Company has designed a two-ton capacity heavy duty stacking box truck to facilitate storage and production operations involving small parts or bulk material. Of welded steel construction, units may be stacked to ceiling height, and may be used singly or in combination as a mobile parts carrier. They have corrugated steel sides, and square tubular uprights



FLOW • SEPTEMBER, 1954

in BULK STORAGE



When you're planning a new materials handling and storage system, plan to put Marietta's experience to work for you! Since the first Marietta storage system went into operation, nearly forty years ago, our engineers have met and solved the storage problems of every industry—this huge background of experience is a plus value that goes into every Marietta installation.

Marietta concrete silos and storage systems have built-in design flexibility that lets you adapt them exactly to your present needs, or change quickly to meet future expansion or conversion. You can count on Marietta engineers to plan and supervise your job, and actual installation is handled by our own skilled crews.

Any kind or amount of equipment can be installed in the walls, floor or roof of a Marietta concrete silo, and any discharge method can be used. You'll find, as thousands of users have, that a Marietta storage system will improve your bulk storage facilities, help build reserves, lower handling costs and keep pace with increasing needs. Write for complete information and catalog.

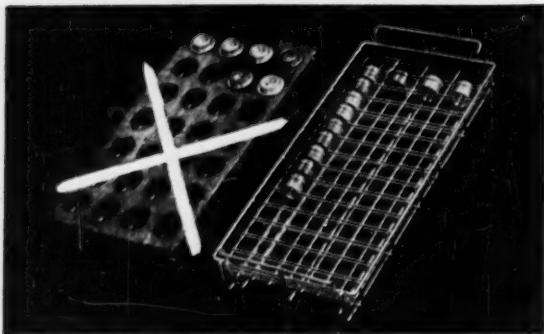
THE
Marietta
CONCRETE CORPORATION
MARIETTA, OHIO

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Circle No. 173 on Reader Service Card for more information

"Carryers" strike at costs missed by other handling means



Carryers are engineered to your job requirements, carefully suspending each part for protection of all critical surfaces. Contrasted to ordinary wire baskets, wood boxes, trays, or tote bins, Carryers become an integral part of your conveyor system. They convey parts through all processing stages as well as the cleaning cycle, eliminate non-productive labor time and costly scrap due to careless handling. Carryers do not become contaminated. Many have been in service 15 years. They will pay for themselves in 30 days on scrap savings alone. Carrier bins also available for bulk handling of non-critical parts.

this free brochure may help you.

MID-WEST

MID-WEST WIRE PRODUCTS CO., INC.
27 Years of Parts Handling Experience
2559 FENKELL DETROIT 21, MICH.

GET THE MOST FOR YOUR MAINTENANCE DOLLAR!

With this $\frac{1}{2}$ ton capacity unit, you can haul bulk loads like scrap or concrete—haul heavy repair or maintenance items on the flat bed—plow snow or do light grading with the blade accessory—keeps down weeds or control insects with 50 gal. sprayer attachment.



Interchangeable bucket and flat bed latch onto Prime-Mover chassis . . . blade and sprayer attached in jiffy. Works indoors—outdoors, through narrow doors, on rough ground, in all kinds of weather. Take the load off your maintenance men with a Prime-Mover. Write for On-the-Job data. Prime-Mover Co., Muscatine, Iowa.

Circle No. 127 on Reader Service Card for more information
184

with nesting caps which provide maximum strength for safe stacking, according to the manufacturer. Six-inch swivel casters provide easy maneuverability.

Write 270 on Reader Service Card for more information

Stand-Up Tractor

Model SX-24 is the latest addition to the Barrett-Cravens Company line of electric industrial trucks. The operator stands in a space provided at the rear of the Tractor Ox. The battery powered unit has 200 pounds rated drawbar pull at $3\frac{1}{4}$ mph; a speed of $6\frac{1}{4}$ mph with no load, and $3\frac{1}{4}$ mph with 10,000 pounds rolling load. A 24 volt battery is standard. Forward and reverse push button controls and dual trigger hand operated brake controls for operation with either hand are located on the steering handle. The tractor has 180 degrees of turn; 90 degrees in each direction. It will turn in 39 inch intersecting aisles.



Write 271 on Reader Service Card for more information

"KRANE KAR Mobility Is Valuable"

says Jos. Tinellis, Yard Foreman,
LACHOW BROS., INC.
BROOKLYN, N.Y.

"The SILENT HOIST KRANE KAR keeps our crowded yard shipshape," says Mr. Tinellis. "Maneuvers easily, handles loads fast, places them accurately. With lifting clamps or sling chains we move steel shapes, lumber, tanks, scrap. Load and unload trucks. We sort and pile beams, channels, angles up to 7 tons. Also use KRANE KAR on Construction, traveling miles to erection jobs. WE'VE CUT OUR MATERIALS-HANDLING COSTS ABOUT 50%."



Gas or Diesel; 9-37 ft. Booms or Adjustable Telescopic Booms; Pneumatic or Solid Rubber Tires; Electric Magnet; Clamshell Bucket.

Write for Bulletin No. 798

"Silent Hoist" KRANE KAR Swing-Boom Crane . . .
 $1\frac{1}{2}$, 2 $\frac{1}{2}$, 5, 10, 12 $\frac{1}{2}$ Ton Capacities.

SILENT HOIST & CRANE CO.
1800 Avenue M Heavy Duty Material-Handling Equipment
855 63rd Street, Brooklyn 20, N.Y.

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FLOW • SEPTEMBER, 1954

Sealed-Raceway Caster

A new sealed-raceway Rapistan industrial caster series said to be priced one-third less than non-sealed types of comparable service rating, is being manufactured by The Rapids-Standard Company, Inc. Neoprene seals on the new 5200 series casters increase life and cut maintenance time and expense by keeping lubricant in the raceways and

sealing out destructive dirt, water and chemicals, it is claimed. Five types of wheels, including the MB industrial with sealed roller bearings, are available with load capacities ranging up to 1200 pounds per caster.

Write 272 on Reader Service Card for more information

Easily Converted Radio

New two-way mobile radio equipment which is said to be easily converted for operation on either 6 or 12 volt automobile batteries has been announced by the Radio Corporation of America. It can be ordered for either voltage and for use



TRACTORS



FORK LIFTS

ALL GASOLINE POWERED MOTORS

BUTANE CUTS FUEL COSTS 40%

BUTANE — the magic, modern fuel that makes engines run smoother and last four times as long, cuts oil consumption 66% —lets spark plugs last for 35,000 miles—cuts motor overhauls by 66%. IT'S READY TO WORK FOR YOU — indoors or out, no carbon monoxide fumes to sicken operators — perfect combustion. Installation is simple . . . results satisfactory.



Extensively used on farms, industrial plants and warehouses across the nation. Proven in thousands of installations. Investigate NOW.

SEE YOUR LOCAL DEALER OR WRITE DIRECT TO

Best Buy BEAM! THE PARKDALE COMPANY
Manufacturers of BEAM LPG PRODUCTS
3040 ROSSLYN ST. • LOS ANGELES 65, CALIF.

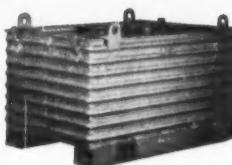
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FLOW • SEPTEMBER, 1954

move it

or stack it
with *Brusco* parts handling equipment



BRUSCO DROP DOOR PARTS BOX



No. 558 BRUSCO CORRUGATED SKID BOX



No. 559 BRUSCO CORRUGATED SKID BOX



No. 1210 BRUSCO SELF-DUMPING HOPPER

Save time, space and dollars by handling production parts — with BRUSCO Parts Handling Equipment. Move production parts with peak efficiency. Stack production parts to save floor space, to provide more floor space for production work and machinery. Every problem of materials handling can be met with BRUSCO engineered equipment. And BRUSCO is all steel, welded for strength and rigidity, fabricated with the correct gauge to meet your materials handling requirements.

These BRUSCO units, and many others, can be built to fit your handling problems. Write BRUSCO today for complete information.

BRUMMELER STEEL PRODUCTS CORPORATION

1410 Ionia Ave., S.W. Grand Rapids, Michigan

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Circle No. 105 on Reader Service Card for more information

MERRILL MATERIALS HANDLING DEVICES



MERRILL BROTHERS

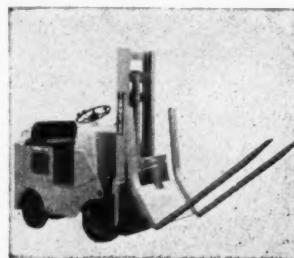
56-74 ARNOLD AVENUE MASPETH, N.Y.

in adjacent channels with either 20 or 40 kilocycle separation, and can be readily converted at any time the requirements change. The new "Fleetfone" models, available for either 30 or 60 watt output, include both station equipment and mobile transmitter receivers.

Write 273 on Reader Service Card for more information

Pulpwood Handling Speeded

Paper workers are said to be able to speed operations with the new Pulpwood Handler, engineered by Towmotor Corporation. Special forks mount on a standard hydraulic scoop activating mechanism. In operation, the truck is driven forward to start the forks into the pulpwood. At the same time, the Pulpwood Handler is tilted back to scoop up a load. Slanted fork projects at the top serve to cradle the pulpwood into a stable, compact load. Dumping is accomplished by raising the load to the required dumping height and hydraulically tipping the forks forward. The attachment is readily interchangeable.



Write 274 on Reader Service Card for more information



Hamilton Industrial Trucks

Whatever your requirements . . . there's a Hamilton truck just right for your job! Ranging in load capacity up to 12,000 lbs., Hamilton trucks are available in hundreds of styles and sizes—platform trucks, box trucks, stake trucks, shelf trucks, 2-wheel hand trucks, wagon trucks, lift truck systems, dollies, barrel skids and many others. Special trucks of wood or steel are also designed and built by Hamilton to meet particular requirements. Look into Hamilton trucks before you buy! Be sure you get the right truck for your job! It can lower your costs substantially!

The Hamilton Caster & Mfg. Company

1672 DIXIE HIGHWAY, HAMILTON, OHIO

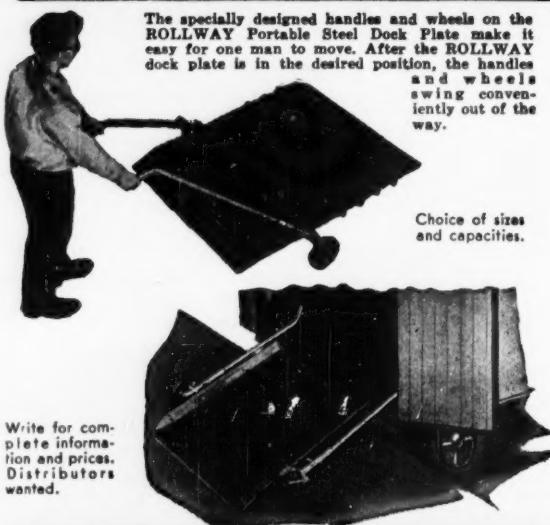
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186



INCREASE EFFICIENCY ON YOUR LOADING DOCK WITH SENSATIONAL NEW **ROLLWAY** PORTABLE STEEL DOCK PLATE

(Patent Applied For)

The specially designed handles and wheels on the ROLLWAY Portable Steel Dock Plate make it easy for one man to move. After the ROLLWAY dock plate is in the desired position, the handles and wheels swing conveniently out of the way.



Choice of sizes and capacities.

Write for complete information and prices. Distributors wanted.

MANUFACTURED BY

WOODFORD HYDRANT COMPANY

1626 DELAWARE • DES MOINES, IOWA

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FLOW • SEPTEMBER, 1954

Conveys Four Drums At Once

Drum Lifters attached to a 2-part chain sling can be quickly attached and detached and convey 4 drums in 1 lift, according to the manufacturer Merrill Brothers. It is claimed that each drop forged individual drum lifter has a rated safe working load of 1000 pounds, so that the complete unit will lift 2 tons with a liberal safety allowance. The lifter is said to be equally adaptable on drums where the head is in place or removed for holding manufactured items or waste material, or when in a horizontal position. The opening of the grip measures 1-1/4 inches.

Write 275 on Reader Service Card for more information

Automatic Conveyor Lubricator

An air operated, fully automatic lubricator for trolley type conveyor wheels is being marketed by the Moore Lubricator Company. Either oil or grease may be used in the lubricator. Models are available for 3, 4 and 6 inch "I" beam rails. The



Attached by a simple draw-bar, the Trojan Tractor quickly converts existing, slow, hand-pushed hoists and light overhead cranes into fast, power-traveled units. Save time, effort; reduce material handling costs.

Ask for Trojan Tractor Bulletin 810 today.

DETROIT HOIST & MACHINE CO.

8263 Monroe St., Detroit 11, Mich.

Designers and Manufacturers of Hoists and Cranes

Since 1905



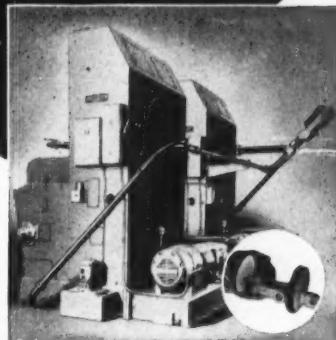
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FLOW • SEPTEMBER, 1954

HERE'S HELP!

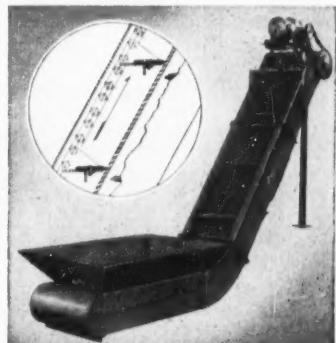
**Hapman CONVEYORS
offer TWO WAYS to
REMOVE CHIPS AUTOMATICALLY**

TUBULAR CONVEYOR HANDLES SMALL CHIPS



... from machine tools like these Oilgear Vertical Broaching Machines, using one Hapman Conveyor with patented Sealed-pin Chain and tough Neoprene Flights. Tubular Conveyor will also handle abrasive dusts, scale, sludges, welding flux.

Chip-O-Matic TYPE REMOVES SPIRAL TURNINGS



... large chips, small parts, stampings and scrap automatically. Simple and dependable in design, this money-saving conveyor can be adapted to remove parts from coolant tanks without loss of coolant. Also has Sealed-pin Chain and Rib Flights with Neoprene wear strips.

GET DETAILS ON BOTH COST-CUTTING TYPES — WRITE FOR:

Tubular Conveyor Bulletin F-954

Chip-O-Matic Bulletin CF-954

Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

Circle No. 70 on Reader Service Card for more information

Circle No. 189 on Reader Service Card for more information

HANDLING BULK MATERIALS?

"TAKE IT UP A FLO-TUBE®"

The spiral conveyor of steady, dependable service. Sturdy cast iron trough bolts together in 3 ft. sections, capped with steel plates for easy removal if ever necessary.

Built to take the abuse of coal, yet with tolerances just right to handle materials from grain size to lump.

Hopper level maintained by 'off-on' automatic switches. Exposed end for pick-up.

To fill 3 or more hoppers use gate-valves in Flo-Tube horizontally. Below, filling 2 hoppers with "Y" chute.

CANTON STOKER CORP.

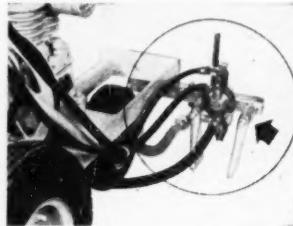
SPECIALISTS IN AUTOMATIC COAL FIRING, HANDLING AND CONTROL EQUIPMENT
108 ANDREW PLACE S. W. • CANTON, OHIO

unit lubricates wheels on both sides of conveyor with a measured amount of oil or grease under pressure. It is adjustable for quantity from 0 to .05 cubic inches per wheel. An airline is the only connection required. The nozzles make sustained, straight line contact with grease fittings during injection, eliminating drippage. An automatic stop shuts the lubricator off, if desired, after conveyor has made one round.

Write 276 on Reader Service Card for more information

Automatic Industrial Marking

A new automatic striping gun for use on highway and industrial zone-marking equipment is available from Kelly-Creswell Company. The gun is diaphragm operated, and is said to require about 25 percent less compressed air to operate at peak efficiency. No working parts are exposed, thus simplifying cleaning and maintenance. The manufacturer says the new gun is being installed on all of its various types of striping equipment. It is also available as a replacement part.



Write 277 on Reader Service Card for more information

JAKES

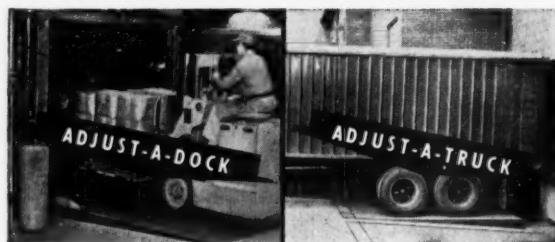
America's Finest Industrial Trucks and Trailers

Tow truck for conveyor line use. Shown for over-head line but adaptable for in-floor system. Rubber-tired wheels with sealed bearings and sealed casters. Specification sheets available.

MODEL NO. TT-8

Circle No. 83 on Reader Service Card for more information
188

ROWE Adjustable Dock And Truck Ramps



- ...help you move more tonnage
- ...cut your dock handling costs
- ...eliminate non-productive dock tie-up of equipment and personnel
- ...reduce breakage and accidents

Whether you are planning new construction or modernizing old shipping facilities, ROWE offers a large selection of low cost dock or truck ramps that will enable you to improve the efficiency of your loading or unloading operations.

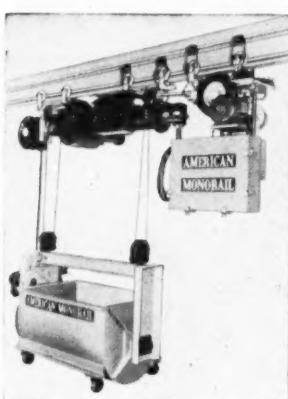
Write for a free copy of the **ROWE** booklet detailing equipment available.



ROWE METHODS, INC.
2534-C DETROIT AVENUE • CLEVELAND 13, OHIO
Circle No. 140 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

Automatic Bucket Carrier

A new automatic carrier with roll-over bucket has been designed by American Monorail Company for intermittent transfer of bulk materials between a single loading point and any number of discharge stations.



The unit consists of a standard twin-hook electric hoist for raising and lowering the special bucket equipped with casters for manual positioning on the floor. The bucket is mounted within a rigid frame with one end geared to an electric motor which turns the bucket one complete revolution at the discharge point. Electric controls for automatic dispatch, station selection as well as manual operation are also carried on the unit.

Write 278 on Reader Service Card for more information

All-Purpose Hoist

A streamlined, all-purpose chain hoist capable of handling loads up to 25 tons was introduced recently by the Wright Hoist Division of the

You can provide easy mobility to a variety of industrial products with

IRONBOUND ALL-PURPOSE HANDLING UNITS . . .

POPULAR IRONBOUND



• An easy to handle ruggedly constructed unit for carrying bulky and heavy loads at lowest cost. Seven standard sizes with one or two push handles makes it easy to select the proper truck for your requirements. Ask an Ironbound engineer for suggestions.



The **HANDY** for furniture and similar items.

The **HAULER** for cases, crates, tote boxes, etc.

The **HUSKY** for general use throughout the plant.

THE IRONBOUND "SAFETY-SKID" WITH ROUND CORNERS



Ironbound construction assures long hard use with complete safety to product and operator. Still the time proven method for handling of materials efficiently and economically.



IRONBOUND

BOX & LUMBER COMPANY
Materials Handling Division

30 HOFFMAN PLACE • HILLSIDE, N. J.

MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS, FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

Circle No. 81 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

Well-stacked!

Use your air space from floor to ceiling to stack materials on E.M.I. racks. They save valuable floor space, protect workers and stock, and speed up materials handling in warehouse, plant or dock. Low-level stock is never tied up. Stationary or portable racks fabricated of strong, square tubular steel are available to stack most materials. Sections can be adjusted to fit any space or unit load. E.M.I. engineers will design special racks for your materials. You save money, space and time with E.M.I. racks.

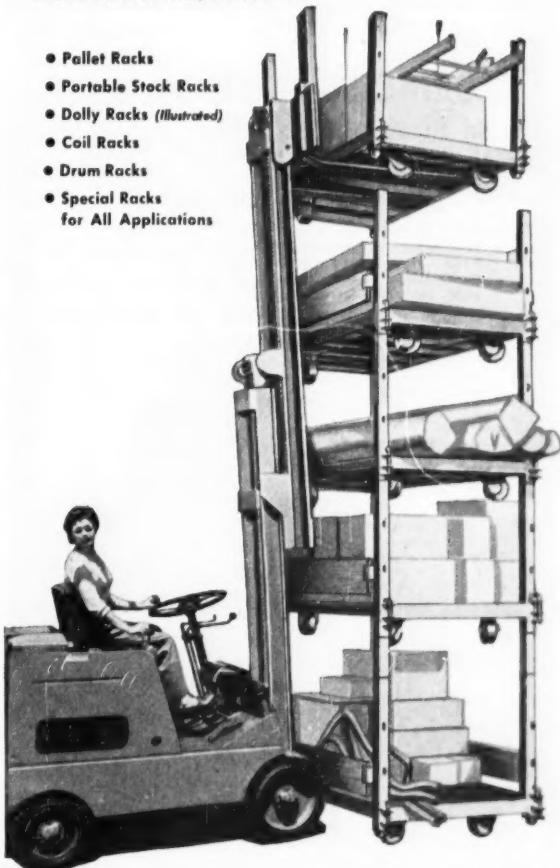
WRITE FOR NEW
ILLUSTRATED CATALOG



EQUIPMENT MFG. INC.

21552 Hoover Rd., Detroit 5

- Pallet Racks
- Portable Stock Racks
- Dolly Racks (Illustrated)
- Coil Racks
- Drum Racks
- Special Racks for All Applications

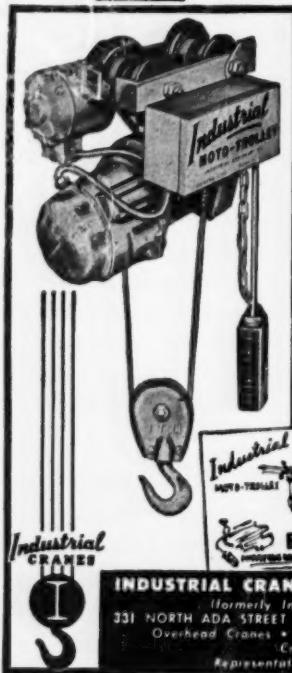


Circle No. 55 on Reader Service Card for more information

Circle No. 78 on Reader Service Card for more information

Industrial MOTO-TROLLEY

The Original Packaged Motor Driven Trolley



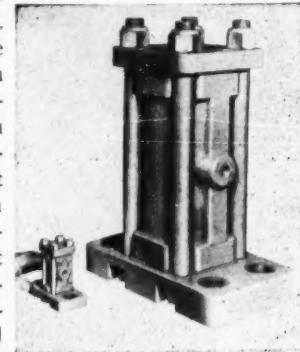
MAY BE ATTACHED TO
YOUR STANDARD
ELECTRIC HOIST . . .

Adjustable to
Accommodate Wide
Variety of Beam Sizes

- Crown-tread machine steel wheels with hardened drivers.
- Each wheel equipped with double-row precision ball bearings and removable-head axle with Alemite grease fittings.
- Powered by a crane-duty high-torque totally enclosed motor of 30 minute 55 degree rating.
- Magnetic contact panel has transformer to reduce voltage in single speed push button control circuit.
- 4-button control station operates single speed trolley and hoist motions.

Write for Literature

INDUSTRIAL CRANE & HOIST CORPORATION
Formerly Industrial Equipment Co.
331 NORTH ADA STREET CHICAGO 7, ILLINOIS
Overhead Cranes • Job Cranes • Monorail Systems
Crane Runways
Representatives in Principal Cities



American Chain & Cable Company. It will be produced in 11 different capacity models. The sealed construction of the hoist is said to make it suitable for use under practically all atmospheric and operating conditions.

Write 279 on Reader Service Card for more information

Vibrator Range Increased

Two new air vibrators have been developed by the Cleveland Vibrator Company. Known as the type F, they are of 1 inch and 5 inch piston diameter. The 1 inch type F is an extremely lightweight unit, while the 5 inch model is a heavy-duty long stroke unit for larger bin applications where arching, bridging and sticking conditions are extreme. All type F vibrators operate on 25 to 100 p.s.i.g. continuous line pressure. Maximum efficiency is obtained at 80 p.s.i.g. They are designed for continuous or intermittent operation, and can be used on bins containing from one to several hundred tons of materials.

Write 280 on Reader Service Card for more information

FLORINE MARKING MACHINE

With 3rd Wheel-Guide . . . Makes Safety & Parking Lines At Walking Speed. 20 Times Faster Than Hand Marking . . . Often Pays For Itself On First Job!

- New! Semi-pneumatic tires—ollite construction
- Third wheel 18" forward of carriage keeps machine "on track" long before marking begins
- Guide Wheel arm folds back at curb or wall, lets machine run right up to barrier
- Machine wheels to other areas at slight lift of handle
- Makes straight, curved, continuous or skip lines 2, 3 or 4" wide with interchangeable carriages
- Gravity feed, no motor, heavy gauge metal
- Holds 1½ gallons. Easy to clean and store

\$99.50

F.O.B. Detroit
Fully Guaranteed



H.C.
SWEET
CO.

12345 Telegraph,
Detroit 28, Mich.

Circle No. 184 on Reader Service Card for more information
190



Stock arrives on bench-high line. Empty trays return on center line. Filled cartons move to banding, weighing and shipping without leaving conveyor.

METZGAR EQUIPMENT—PLUS

- GRAVITY-WHEEL, ROLLER
- LIVE ROLLER
- POWER BELT—HORIZONTAL
- FLOOR-TO-FLOOR
- NYLON ROLL
- SWITCHES, CURVES

METZGAR EXPERIENCE

. . . gives you highest conveyor efficiency and steps up production tempo. Ask for suggestions. No obligation.

METZGAR CONVEYOR CO.

MFRS. OF WHEEL & ROLLER GRAVITY & LIVE ROLLER CONVEYORS • POWER BELT CONVEYORS • SWITCHES • ACCESSORIES & REEL DOLIES

GRAND RAPIDS 4, MICH

Circle No. 106 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

Portable Winch-Hoist

The Lug-All Company has equipped its winch-hoist with a new and more rugged main frame to increase its adaptability. The ratchet teeth are protected from rough surfaces by the new frame, said to be a distinct advantage when working under conditions such as alongside steel wire or walls. The unit weighs only nine pounds, yet can handle up to 1½ tons. It is equipped with a reversible safety handle that will bend when extreme overloads are applied. An interlocking pawl arrangement allows loads to be backed off easily and safely. It has stainless steel springs, oiled-for-life bearings and a 133 strand flexible preformed aircraft cable that winds on the drum and out of the operator's way. Among its recommended uses are: tightening conveyor belts; hoisting motors, shafts, gears; lifting valves into position; pulling cable through conduit; and connecting slip-joint pipe.

Write 281 on Reader Service Card for more information

ONLY \$585.00
for this PRESTO
HYDRAULIC LIFT
... complete with
battery and charger!

Model B-866
1000 Lbs. Capacity
66" Lifting Height

COMPLETE LINE—20 basic Presto models with a variety of fork and platform arrangements.

LOWEST PRICES—From \$595 down to \$525 for battery models. \$275 to \$215 for manually operated models.

RUGGED CONSTRUCTION—Safety tested for 25% overload. Fully warranted against defective materials and workmanship.

IMMEDIATE DELIVERY—On all standard models. All prices F.O.B. Pawtucket, R. I., subject to change without notice.

ASK FOR FREE CATALOG ILLUSTRATING COMPLETE LINE OF PRESTO HYDRAULIC LIFTS

LEE Engineering Company
Quality is our most important product

267 Armistice Blvd., Pawtucket, R. I.

Circle No. 153 on Reader Service Card for more information
FLOW • SEPTEMBER, 1954

**Write for bulletins on this
rugged money-saving
materials-handling
equipment**



Phillips equipment has proved its merit in thousands of applications everywhere. Ruggedly built and well designed, it withstands hard usage for longer periods. You'll profit by having Phillips literature on file.

Phillips

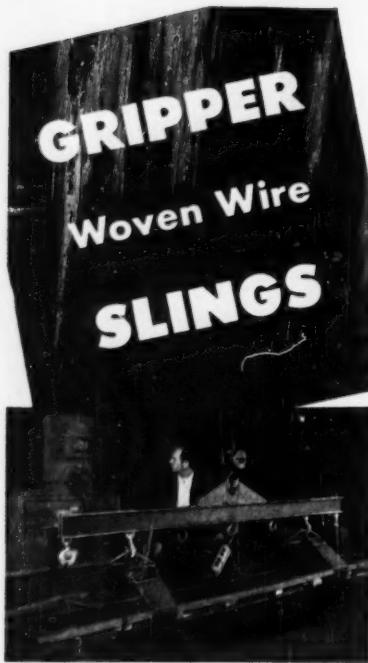
CORPORATION

(formerly Phillips Mine & Mill Supply Co.)

Manufacturers Since 1863

13 Arch Street, Carnegie, Pa.

Circle No. 123 on Reader Service Card for more information



- **for LOWEST SLING COST**
- **LOWEST SLING COST** — because they last longest! Gripper slings are all-metal, won't rot, cut or tear . . . even from handling sharp edged loads or severe use. What's more, their unique spiraled loop construction prevents kinking, tangling, snarling, and eliminates flexing of individual wires to prevent metal fatigue.
- **WIDEST USE** — broad flat sling body gives greater bearing surface. You can lift loads with a single Gripper sling that would require bridling with other types. Specially designed handles provide either basket or choke hitch. Fully flexible sling body wraps completely around any load . . . even small radius bundles . . . in choke rig, thus, grips entire load tightly, eliminates slipping.
- **WIDE RANGE OF CAPACITIES** — up to 100,000 lbs. in standard lengths and widths. Special sizes and capacities on request.
- **FOR FULL INFORMATION** see your mill supply, materials handling or safety equipment distributor. Or, write direct for FREE CATALOG and name of nearest distributor.

The Cambridge Wire Cloth Co.
Dept. W • Cambridge 9, Md.



OFFICES IN LEADING INDUSTRIAL AREAS

DEALERS: ask about open territory data

Circle No. 34 on Reader Service Card
192

CLASSIFIED ADVERTISING SECTION

USED EQUIPMENT—MEN—JOBS—LINES

Rates: for "Positions Wanted" \$8.00 minimum, limit 25 words. For all other classifications \$10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, \$12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

FOR SALE

Liquidating business. Have approximately 151 5-ft. and 10-ft. lengths with curves and supports of lightweight aluminum and steel gravity wheel and roller conveyor. Write c/o FLOW Box 9154.

HELP WANTED

CONVEYOR ENGINEER—Experienced Engineer wanted as part of expansion program. Previous experience with conveyor manufacturer desirable. Should know all phases of gravity and power belt conveyors. Opportunity unlimited. Give complete resume including experience, education and salary expected to SPEEDWAYS CONVEYORS, INC., SPEEDWAYS Building, 202-08 Rhode Island Street, Buffalo 13, New York.

REPRESENTATIVES WANTED

MANUFACTURERS AGENT! Prominent manufacturer of famous make BRUSH PEN seeks aggressive Mfrs. Agents calling on Wholesalers, Jobbers, and Distributors to expand sales of their fast selling, time proven, amazing Brush pen that writes on practically all surfaces. Prefer organization with successful record in sales of non-conflicting allied lines. All replies confidential. Lockwood Co., 366C Boston Post Road, Milford, Conn.

JOB HUNTING?

Here's a new FLOW service to aid those who hesitate to answer "blind" advertisements in our Help Wanted column. Rather than jeopardize your present job by having your letter fall into the hands of your own employer or some other unwanted firm, just send FLOW a list of the "taboo" firms along with your letter. If the advertiser is on your list your letter will be returned to you.

IF YOUR AUTOMATION PROGRAM INCLUDES LIQUID MEASURING...

Start with a



XACTO METER

Chemical processors have learned that the Bowser XACTO meters have proved to be the answer to product uniformity, increased production and reductions in operating costs.

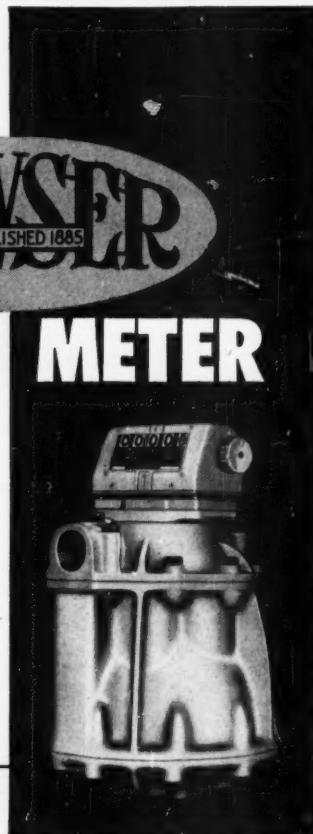
XACTO meters are accurate and dependable . . . will safely handle over 600 different liquids in processing, blending, packaging and many other batching or blending operations.

SEE BOOTH 525 at the Instruments Congress and Exposition Sept. 15 to 20.

BOWSER, INC.

1380 Creighton Ave., Ft Wayne 2, Ind.

SALES OFFICES—ATLANTA • CHICAGO • CLEVELAND • DALLAS • DETROIT • KANSAS CITY • LOS ANGELES • NEW YORK • PITTSBURGH SAN FRANCISCO • HAMILTON, ONTARIO



Circle No. 26 on Reader Service Card for more information

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**BAGS, BULK,
BARRELS, BOXES
MECHANICALLY!**

You can save time and money with increased safety by installing a Cesco Skip-Hoist Dumper. Lifts, upends and dumps 100 loads per hour with a lifting capacity range from 100 to 1500 lbs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Easy, safe operation from push button controls speeds up material handling and eliminates accidents.

Write for complete catalog . . .

ESSEX CONVEYORS, INC.
165 Franklin Avenue, Nutley 10, N.J.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street, Los Angeles 13, California

CESCO DUMPERS

Circle No. 43 on Reader Service Card
194

Executive Realignment at Clark



C. H. King



R. H. Davies

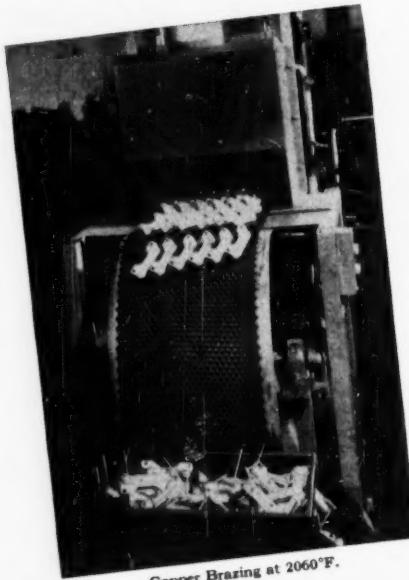
There has been a realignment of executive responsibilities in the Automotive and Industrial Truck Divisions of Clark Equipment Company, according to George Spatta, president.

Robert H. Davies, vice president, will exercise over-all direction of the Industrial Truck Division, including product development, engineering, manufacturing, sales and service functions.

Vice President Charles H. King will perform the same duties as Davies for the Automotive Division of the company.

E. M. Schultheis, also a vice president and previously in charge of Automotive Division sales, will serve as a consultant to President Spatta.

Keep your product on the move . . .



Copper Brazing at 2060°F.

WITH
ASHWORTH
PROCESS
BELTS

Woven from any metal capable of being drawn into wire form ASHWORTH belts afford a conveying medium in temperatures from sub zero to 2100°. Whatever your process—Ashworth belts can help you effect economies and

Keep Your Product on the Move

ASHWORTH BROS., INC.
METAL PRODUCTS DIV. • WORCESTER, MASS.

Sales Buffalo • Chattanooga • Chicago • Cleveland • Detroit • Kansas City • Louisville
Engineers: Los Angeles • New York • Philadelphia • Pittsburgh • Rochester • Seattle • St. Paul
Tampa Canadian Rep., PECKOVER'S LTD. • Toronto • Montreal

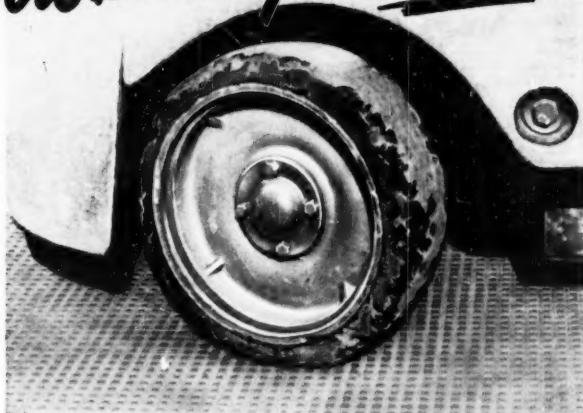
WRITE FOR
ILLUSTRATED CATALOG
F52



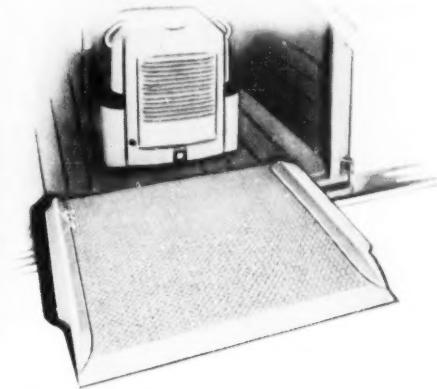
Circle No. 15 on Reader Service Card for more information

FLOW • SEPTEMBER, 1954

Tire Damage Like This



... CAN'T HAPPEN WITH
DOCK BOARDS LIKE THIS!



THERE IS A BIG DIFFERENCE IN DOCK BOARDS

HERE ARE MORE REASONS

Engineered for Your Specific Operations

1. Engineered for your specific dock conditions—from data taken right at your loading dock.
2. Engineered specifically for your equipment and loads—to insure maximum service, efficiency, and safety.
3. Engineered specifically for your operational requirements—after a complete on-the-job analysis by a Magliner dock board specialist.

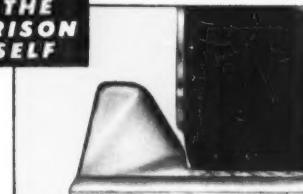
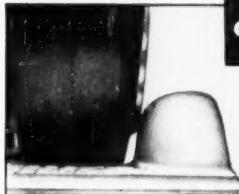
Gives You These Outstanding Design-Construction Features

4. Triple strength curb ends—of special-alloy, high strength magnesium . . . double tapered for wide angle turns. An exclusive Magliner feature.*
5. Positive, adjustable drop lock—another exclusive Magliner feature.**
6. Crowned, so that the edges bear snugly against the dock and carrier—to accommodate varying differences in height.
7. Safety factors in both design and construction to fully meet your requirements . . . and provide needed insurance for safe, dependable, and economical long-life service.

MAGLINER DOCK BOARDS PREVENT DAMAGE TO POWER TRUCK TIRES

HERE ARE THE FACTS!

MAKE THE COMPARISON YOURSELF



ORDINARY SIDE CURBS ARE MADE LIKE THIS... permitting the wheel rim of power trucks to bear against the side curb! These repeated contacts create sharp, jagged edges in the curb, which in turn gouge and cut tires, causing costly damage. In addition, side curbs are weakened and the dock board's service life is greatly reduced.

MAGLINER TIRE-SAVER* SIDE CURBS ARE MADE LIKE THIS... They prevent wheel rims from coming into contact with the side curb. This exclusive Magliner feature* eliminates costly tire replacements and prolongs dock board service life. This important, money-saving feature is available only with Magliner Dock Boards.

*Pat. Pend.

8. Added strength through stress relieving—an extra safety advantage that can't be seen, but it's important.

9. Magnesium light! Magnesium strong! Magnesium safe! Made of the world's lightest structural metal—for easy one-man handling, maximum safety, and reliable service.

PLUS . . .

These added safety and convenience features:

10. Beveled edges (maximum 10° slope) facilitate movement of valuable loads on

and off the dock board, avoiding hazardous load jar . . . eliminating equipment damage and load loss.

11. Comfortable, roomy hand grips—sealed to exclude moisture. Optional full length hand rails for added safety and convenience.

12. Specially designed, flush-type lifting hooks to facilitate moving the dock board by power truck. (Offered as optional equipment.)

**Pat. No. 2659914



"Wherever Dock Boards Are Used—Magliners Are Preferred"

DOCK **MagLiner** MAGNESIUM BOARDS

Send Today for Your Copy of Bulletin DB-204

MAGLINE, INC. • P.O. BOX 346 • PINCONNING, MICHIGAN
In Canada: Magline of Canada Limited, Renfrew, Ontario

Have you checked into the advantages of the Magliner Mobile Loading Ramp? A ground-to-carrier loading dock on wheels. Write for Bulletin DB-211.

Circle No. 92 on Reader Service Card for more information

Franchise Circulation GETS A NEW PARTNER:

Action Audit

Now for the first time, the WHOLE story of a magazine for Advertisers

Franchise Circulation

The problem confronting every advertiser is to have his sales message read by the people upon whom his salesmen is calling. To attain that is the perfect integration of advertising to sales. Industrial advertising does a much more effective job backing up salesmen than it does to generate its own direct sales.

The Industrial Publishing Group has developed since 1932 what is probably the most effective means for reaching a sales market that has been devised in industrial advertising.

Wholesale distributors in the fields served by The Industrial Publishing Group's magazines, subscribe to the magazines for their best customers and prospective customers. They pay monthly for each subscription, and the people for whom they subscribe are the active buyers called on daily by their own salesmen. The lists are corrected monthly, assuring that the circulation remains sensitive to the personnel turnover in business and industry.

*How do you know we
reach the right man for you?*

Through ACTION AUDIT. This is the measuring stick which analyzes and particularizes the quantity and the QUALITY of the readers of your and your competitor's advertisements. No other method for such determination has heretofore been devised.

What is Action Audit?

The Industrial Publishing Group asked advertising buyers across the country what they needed to know in choosing publications.

All of the answers fell generally into the groups of "Who reads it?", "How does it reach him?" "What is the degree of the readers' interest?" and "How can the buyer certainly know these things?"

The editorial content of a book is tangible; quantitative circulation measurement has become almost standard practice; surveying has reached higher levels of value to the advertising practitioner. But there are still areas which need greater light.

"Action Audit" is the means of ascertaining and disclosing to the buyer, what happens when a magazine goes to the right man, in the right place, at the right time.

The beginning of a measurement

The Industrial Publishing Group's magazines solicit inquiries for the advertiser by means of a card which the reader may send for further information or action. They are sales leads but they are much more. THEY ARE AN INDEX OF WHO IS READING; OF WHAT HE IS READING.

Why is Action Audit useful to an advertiser?

Publishers' presentations have historically been a "putting-of-the-best-foot-forward". A dozen points about a book have been taken out of context and placed in a favorable light before potential buyers. An advertising buyer about to make a decision has had a hodge-podge of claims and accusations upon which to form a judgement . . . with a suspicion that he also had missing parts.

Action Audit is a presentation by a publisher of the TOTAL STORY OF HIS BOOK, without deletion or expansion of fact. The advertising buyer sees the magazine exposed in all its nakedness and is able to make a fair estimate, with which he feels secure. He can defend his choice in his own mind and to other people. That is why Action Audit is essentially useful, because it is the WHOLE story.

ACTION AUDIT:

- Gives you FACT about reader traffic.
- Demonstrates the news value of business paper advertising.
- Takes circulation and market out of statistics and shows you PEOPLE . . . people in action . . . people interested in what you sell.
- Reflects interest in types of sales appeals.
- Indicates new pools of buyers every month.
- Shows publisher's sensitivity to reader interest and purchasing power.
- High-lights need for rapid, efficient inquiry handling for sales effectiveness.